# Report of the Thirty-Seventh National Conference on Weights and Measures 1952

U. S. Department of Commerce
National Bureau of Standards
Miscellaneous Publication 206

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ITED STATES DEPARTMENT OF COMMERCE • Sinclair Weeks, Secretary

NATIONAL BUREAU OF STANDARDS • A. V. Astin, Director

# Report of the Thirty-Seventh National Conference on Weights and Measures

Attended by Representatives from Various States

Sponsored by the National Bureau of Standards
Washington, D. C., May 20, 21, 22, and 23, 1952

National Bureau of Standards Miscellaneous Publication 206

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*Official photograph of delegates and guests attending the Thirty-seventh National Conference on Weights and Measures, assembled at the National Bureau of Standards.*

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Remarks of Arthur Sanders
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Nelson, Chairman
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surer: G. F. Austin, Jr., Deputy Sealer of Weights and Measures, Detroit, ich.

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(As elected by the Thirty-seventh National Conference)

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ng Hansen
). Thompson
. True
I. Greene
. Levy
. Nelson
S. Bussey
. Austin, Jr.
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B. Daggett, County Inspector of Weights and Measures, North Girard, Pa.

## STANDING COMMITTEES

As constituted at the conclusion of the Thirty-seventh National Conference, e personnel and organization of each of the standing committees of the Conence are as reported below. As reported, the membership of each committee flects the appointments made by the President of the Conference, changes which ve occurred from expiration of term or other cause, and the elections by the eral committees of chairmen, and in one case secretary, for the ensuing year. e term of office for each committee member, in years, is shown by the figure parentheses following each entry.)

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*In Charge of Badges:* H. L. Badger.

# ORT OF THE THIRTY-SEVENTH NATIONAL ONFERENCE ON WEIGHTS AND MEASURES

SORED BY THE NATIONAL BUREAU OF STANDARDS, AND HELD HE WARDMAN PARK HOTEL, WASHINGTON, D. C., MAY 20, 21, 22, 23, 1952

## T SESSION—MORNING OF TUESDAY, MAY 20, 1952

(R. D. Thompson, Vice President, presiding)

invocation was delivered by the Conference Chaplain, R. W. s, Deputy County Sealer of Weights and Measures, Medina y, Ohio. Following the invocation, the Honorable F. Joseph hue, President, Board of Commissioners, District of Columbia, led to the delegates a welcome to the City of Washington. Mr. s conducted an appropriate memorial service for departed ers.

### RT OF THE SECRETARY OF THE CONFERENCE, W. S. BUSSEY

Secretary of the Conference, I present officially the resignation . Edward U. Condon from the office of President of the National rence on Weights and Measures, effective as of the date of his nation as Director of the National Bureau of Standards, Septem- , 1951. Dr. Condon's letter of resignation follows:

al Conference on Weights and Measures
. S. Bussey, Secretary
al Bureau of Standards
ngton 25, D. C.

ncident with my resignation as Director of the National Bureau of Stand- effective on the thirtieth day of September, I consider it proper for me to as President of the National Conference on Weights and Measures, and tender my resignation to you for transmittal at the proper time to the rence.

work of the Conference is of great importance to the successful operations mmerce and industry throughout the Nation. I know that the Conference ntinue its successful endeavors in this field in the years to come and that endeavors will be marked by the same spirit of cooperation which has resent in the years of my association with the Conference.

s with considerable regret, therefore, that I now sever my official connec- ith the State and local weight and measures officials in the United States. l continue to be interested in the advances which such officials are making ghout the Nation in the field of weights and measures.

erely,

(Signed) E. U. Condon, *Director.*

e National Conference on Weights and Measures has continued nction effectively throughout the year, especially through the al standing committees.

e nature of the National Conference is such that its interim ities must be carried on by the committees and officers. The full eration of each committee member and the cooperation of all mem-

bers of the Conference with the committees are essential to prog
Since practically all Conference business must be conducted by n
you can help immeasurably if you will reply to all correspond
promptly.

The Conference is the "hub of the wheel" of uniform and prog
sive weights and measures administration in the United States.
is our duty to keep it well oiled with our enthusiastic cooperation
support in order that this wheel may keep rolling at the hig
possible rate of speed and efficiency.

This is your Conference. It was established for the benefit o
of the people of the United States. The true value of the Con
ence will be determined by the contributions that each of us, as i
viduals, make to its various activities.

(Mr. Bussey continued his report by describing the procedures that woul
followed in the conduct of the Conference. The method of distribution of pa
and reports during the Conference was explained. The report ended wi
description of the social functions that had been arranged.)

## ADDRESS BY DR. A. V. ASTIN, DIRECTOR, NATIONAL BUREAU STANDARDS

(Dr. A. V. Astin addressed the Conference concerning the part the Nati
Bureau of Standards is playing in the national defense program and told of
these responsibilities had increased tremendously during the past few years.
concluded his remarks with the following summary of the development
weights and measures throughout the Nation during the past year.)

I would like to report on the part of the Bureau with which
are most closely connected—its Office of Weights and Measu
Under the able leadership of W. S. Bussey, we have attempte
fulfill numerous requests for assistance and advice from the m
bers of this Conference. Our primary purpose in this area is in
fillment of the basic activity authorized by the Congress to coope
with the States to secure uniformity in weights and measures l
and in methods of inspection.

Since the 36th National Conference, the staff of the Office of Weig
and Measures has been increased by two members. The employm
of M. W. Jensen as Assistant Chief of the Office was announced by
Director last year, and Mr. Jensen started work at the Bureau
July 2, 1951.

We have also succeeded in procuring the services of C. H. Oak
formerly Superintendent, Division of Weights and Measures, S
of Wyoming. Mr. Oakley, who started his Federal employment
January 7 of this year, underwent training at the National Bur
of Standards Master Scale Depot at Clearing Illinois, at the Bur
in Washington, and in the field.

The employment of Mr. Oakley makes possible the culminatio
our plan to have in operation two railway track scale testing u
He has been assigned to one of our two units, and the other is be
operated by D. V. Smith, who has been with the Bureau for m
than 27 years. Between scheduled tests, both of these men are mak
their time available to State and local weights and measures offici
It is felt that efficient utilization of their time results in greater u
formity and better application of recommended test procedures.

Improvement in the efficiency and coverage of weights and meas
enforcement throughout the Nation has continued during the p
year. Many jurisdictions have purchased equipment for test

sale meters. Additional large-capacity scale testing units have placed in service. Many States, counties, and cities have yed additional personnel.

some States, legislative improvements have been made, but no action has been culminated. We still have five States with no rehensive weights and measures control at the State level. There y one State, however, which has no weights and measures control y level.

e Office of Weights and Measures of the National Bureau of dards has had a representative present and participating in every l conference of weights and measures officials during the year—State and regional. We feel that through these meetings we are to keep in touch with activities, progress, and requirements of tate and local jurisdictions.

ff members of the Office of Weights and Measures have made mber of official visitations to State and local offices, and have vored to furnish counsel, information, and advice whenever it een requested.

ree publications of importance to all weights and measures ls and to allied industries have been issued by the Bureau since 6th National Conference. NBS Handbook 45, Testing of Meas- Equipment, the fourth and final of the series of handbooks for guidance, became available about August 1, 1951. This book d be, and we sincerely hope soon will be, read and used by all e weights and measures officials and related experts in business ndustry.

e Report of the 36th National Conference became available about niddle of January 1952 as NBS Miscellaneous Publication 202. f you who registered at the 36th Conference have been sent copies is report.

tional Bureau of Standards Circular 501, Federal and State hts and Measures Laws, was issued during March of this year. s been appraised as a most valuable edition for all weights and ures offices, manufacturers of weighing and measuring equipment, producers and processors of commodities. This compilation in- s enactments through 1949. Our plan is to issue supplements at oximately 5-year intervals in order to include additional up-to- legislative actions.

index to the Reports of all National Conferences, from the first gh thirty-sixth, has been issued and is now available from the . Government Printing Office. Its designation is NBS Miscel- us Publication 203.

rs. K. M. Schwarz, our Attorney-Editor, has been working ghout the past year on the Weights and Measures Case Refer- Book. We hope to place this material in the hands of the Govern- Printing Office before the end of this summer.

r plans for future publications include circulars on specific sub- , as the need is indicated. NBS Circular 503, Statutory Net- ent Marking Requirements for Packages (Undefined) and Pack- of Foods, Drugs, and Cosmetics, is an example of this type ication.

e activities of the States toward the adoption of the specifica- , tolerances, and regulations for commercial weighing and meas- g devices, as contained in NBS Handbook 44, amended, has been

gratifying. There are now 21 States that have officially promulg these provisions, and many others which plan to proceed with adoption. In a few States legislative action is required. Most o States are applying the code in their official inspections.

The States which have officially accepted the H44 codes wit substantial change are Alabama, Florida, Georgia, Indiana, Ka Louisiana, Maine, Massachusetts, Michigan, Montana, Nevada, Jersey, North Dakota, Oklahoma, Oregon, Pennsylvania, Texas, mont, Virginia, West Virginia, and Wyoming.

In addition, the following States have taken initial steps and now in the process of officially adopting the codes: Illinois, Maryl New Hampshire, Tennessee, and Wisconsin.

In closing, I would like to extend to each of you an invitatio call freely on the National Bureau of Standards for assistance in solution of your technical problems. We believe that the work are doing is of fundamental importance to the stability and stre of the Nation's commerce. Therefore, within the limits of our fi resources, we are at your service. Finally, please accept my wishes for both a profitable and an enjoyable series of discuss during this 37th National Conference on Weights and Measures.

(The chairman appointed the following committees to serve during the National Conference: *Nominating Committee*, J. E. Brenton of Californi Chairman; C. A. Baker of New York; J. F. Blickley of Pennsylvania; J. Jones of South Carolina; J. J. Levitt of Illinois; C. C. Morgan of Gary, Indi and R. J. Zierten of Racine, Wis. *Resolutions Committee*, M. A. Nelso Michigan as Chairman; T. C. Beck of Oklahoma; A. C. Becker of Camden Co New Jersey; Walter L. Daniels of Seattle, Wash.; J. E. Mahoney of Maryl M. G. Rice of New York; and Louis Snow of Bridgeport, Conn.)

### THE MEN WHO MAKE THE CONFERENCE

(By W. E. Sheehy, *County Sealer of Weights and Measures, Bridgeport, Co*

(Mr. Sheehy spoke extemporaneously and in a humorous vein. His covered many of the more important aspects of weights and measures adm tration and enforcement, and was both interesting and inspirational.)

### ROLL CALL OF STATES

The Chairman called the roll of States. Delegates from 35 St and the District of Columbia responded. All delegates and t ladies were introduced individually.

(The Conference was recessed until 2 p. m.)

## SECOND SESSION—AFTERNOON OF TUESDAY, MAY 20, 1

(G. H. Leithauser, Vice President, presiding)

### ROLL CALL OF STATE AND REGIONAL WEIGHTS AND MEASU ASSOCIATIONS

The Chairman called the roll of State and Regional Associati of Weights and Measures Officials. Representatives of all 19 A ciations on record responded.

(Written reports from several States and Associations were mimeographed distributed at the Conference.)

. A. Lyon, *Director, Division of Markets and Standards, State of New Hampshire*

e prevailing practice whereby tomatoes are packaged in a con- faced with cellophane, constitutes packaging in a closed package. New Hampshire closed package law states: "It shall be unlawful y person to sell or offer for sale any commodity in package form s the contents thereof is expressed in terms of net weight, measure, merical count in a conspicuous place on the outside of the package, lainly printed statement in large type."

hen this type of package and method of marketing tomatoes leveloped, quantity marking was in terms of weight. This weight sually 15 to 16 ounces to the carton. It has been a growing prac- n recent years to mark by numerical count, fours, fives, or sixes. inspection experience in New Hampshire, indicates that this od of marking has deteriorated to the extent that the actual count package varies from the expressed count appearing on the pack- In addition, the size of the tomatoes in the pack varies, causing iance of weight.

nsumer protection and individual State enforcement can best tained by uniform package marking requirements in all States. achievement of such uniform legislation should be encouraged fostered by this National Conference with the cooperation of Federal Food and Drug Administration.

e have found packages containing five tomatoes marked four, ages of four tomatoes marked five, and packages of six tomatoes ked four or five. The net weights ranged from 11 to 15 ounces. retailer and consumer are confused by these methods of package kings.

his confusion in merchandising and marking packages of tomatoes been the concern of weights and measures officials in Massachu- and New Hampshire for many months. The legitimate packers e area are likewise aroused and are lending support to the require- of a weight statement. A few States, including Texas, have ired for several years that packaged tomatoes be marked with ment of weight.

n March 10, 1952, the following regulation was issued by the Hampshire Bureau of Weights and Measures: ". . . that con- er protection will best be accomplished by expressing quantity ent of tomatoes in package form in terms of weight." The effec- date of this regulation shall be September 1, 1952.

o attempt is being made to standardize on any package. Reports ived from repackers indicate standardization on 12- and 14-ounce ages. Possibly a 16-ounce package will be used.

he Massachusetts Department of Weights and Measures has issued nilar ruling to become effective on September 1, 1952.

he problem of more adequate and uniform control over the sale omatoes in retail cartons should be the concern of the National ference on Weights and Measures. The trade volume of this type ackage is steadily increasing and is Nation-wide in scope.

R. Kennedy: The proposed Model Regulation on Package Mark- Requirements provides for the marking of packages by count in ain instances. In the case of tomatoes, the consumer can see the

merchandise she is buying. Do you not think a statement of numer
count is sufficient?

Mr. Thompson: Mr. Lyon, I would like to ask if you had m
trouble in getting the cooperation of your Attorney General in
promulgation of this regulation.

Mr. Lyon: We encountered no difficulty. The attitude is that
count, as it refers to tomatoes in the package, does not give the ne
sary information to the consumer. The consumer cannot make a
comparison of value without knowing the weight of the product.

Mr. Mahoney: I carried on a limited informal survey on this it
I found not one housewife who was interested in the weight c
package of tomatoes. They were interested in quality, condition,
uniformity of size.

Mr. McBride: We accept too readily, I think, the expressior
quantity in terms of count. If we require that the expression
quantity be in terms of weight, we can offer to the consumer
utmost in informative declarations.

We have made surveys, and, as a result of them and the experie
which we have had, it seems to us that the best way to protect
consumer is to require the declaration of quantity in terms of wei

Mr. Mundy: What is the attitude of the Federal Food and D
Administration as to the method of marketing tomatoes in cartc

Mr. Rowe: I have been listening with interest to this discuss
I am sure you will appreciate that it is a matter for debate. Tl
are two sides to the question. The Federal Food and Drug Adn
istration has not insisted upon a net-weight declaration. We have
however, that there should be a survey to find out what the consu
really thinks about the matter. The Federal law stipulates t
the statement of contents, which may be in terms of weight, meas
or numerical count, shall be in the term that is used most gener
by the consumer and that gives an accurate declaration of the quan
of content. We have been unable to determine just what is an accu
determination in this case.

At the present time, while we have not insisted upon the net-wei
declaration, we have given consideration to it and we are open-min
about it. We have hoped to conduct a survey, but this has not b
done to date.

Mr. McBride: Has the Federal department indicated any tr
as to what their thinking might be? This is a problem of l
standing.

Mr. Rowe: The Food and Drug Administration has not as
taken an official position. I do not think that should deter the St
from going ahead with this matter.

Mr. Meek: In Indiana we require cartons of tomatoes to be labe
in terms of net weight. We enforce that requirement under the Fo
Drug, and Cosmetic Act, which, in Indiana, is exactly the same as
Federal Act. Both the Food and Drug Division and the Weig
and Measures Division are in the Indiana State Board of Health.
have, in company with others of the State Board, talked to Mr. Qu
and others of the Federal Food and Drug Administration. We h
always had the impression that they look with favor upon the label
of cartons of tomatoes in terms of net weight. We have interpre
the Food and Drug Law of Indiana as requiring the labeling in ter
of net weight, and we are receiving from 85 to 90 percent compliar

nk it is a reasonable requirement, and I think it helps to protect ublic. I would like to see this Conference go on record as favor- he sale of this commodity by weight.

R. GREENE: We directed a letter to W. A. Queen, Food and Drug inistration, April 15, and we received an answer on April 23, h referred to a letter dated January 14, 1948. I will read part as I think it is of interest to this Conference.

This Agency is anxious to proceed promptly against all practices which it ards as a violation of the law. Unfortunately its ability to do so is tricted, for it has limited facilities.

First, attention must, of course, be given to such abuses as the distribution impure matter, etc.

Before this Agency brings any action against interstate shipments of kaged tomatoes, we would want to be fortified with additional informa- n as to what constitutes accurate information as to quantity. This would essitate a consumer survey.

In view of our inability to divert action to the packaged tomato industry this time and since consumers do not have the opportunity to see the size d quality of such tomatoes, it is not our intention to institute regulatory tion at this time against such packaged tomatoes shipped by this firm ely for failure to bear a net-weight statement on the package. It is our rpose to make such a consumer survey just as soon as opportunity permits d appropriate announcement of our view on the labeling will be made.

dditional comment on the subject was added by Messrs. Fisher, Crawford, kley, Mullen, Goode, Ising, Rafael, and Carey.)

he matter of tomatoes in paper cartons is included in the Report of the Con- ce Committee on Methods of Sale of Commodities. Additional discussion place after the presentation of this item by the Committee Chairman, begin- on page 61 of this Report.)

## FLOUR WEIGHTS

By G. F. AUSTIN, JR.,

*Deputy Sealer of Weights and Measures, Detroit, Michigan*

Ve have before us, at this time, the discussion of flour weights. As know, this has been a very controversial subject for a long time, , more especially of late, it has come to be a matter which has taken a more serious aspect. The present rise of interest in this subject, refore, is not one based on a sudden impulse, but rather the climax long siege of restless dissatisfaction with a seemingly unwarranted lation.

With the passing of time, the public has become more and more ght and measure conscious, departments of weights and measures e become more numerous, and, with all of the facilities available ay to better acquaint weights and measures officials with their re- nsibilities, together with the excellent on-the-job training pro- ms which abound, a more competent and thorough administration weights and measures affairs has come into being throughout the ntry. Finally, and as a result, matters which have gone more or s unattended heretofore are now coming into the spotlight, so to ak.

In dealing with the subject of flour weights, it is imperative that we give due credence to the problems of all parties concerned, the sumer, the retail store, the jobber, the flour manufacturer, and the ights and measures official. We should enter this discussion with open mind, free from prejudice, knowing well that it is a problem which there is little hope of attaining a panacea; therefore, any

conclusion arrived at here will of necessity be the result of a com
mise based on logical and sound reasoning.

Flour is an hygroscopic substance, and, as a result, it contains v
ing amounts of moisture, depending upon relative humidity, temp
ture, and length of time it is exposed. As a result of this character
of flour, a particular sack of flour will vary in weight from tim
time, depending upon the relative humidities and temperature
which it has been exposed, such changes occurring as a result of
sorption of moisture by the flour or evaporation of moisture in
flour. The hygroscopic character of flour is a well-recognized
ment; however, for the purpose of this discussion, it is well to kee
mind that the climatic condition to which flour is normally expo
during its period of transportation and delivery to the ultimate
sumer, is such as to cause a sharp loss in weight due to the evapora
of moisture.

This being the case, it would seem only logical that some transp
ing and merchandising controls should be set up by properly
stituted authority to assure the presence of "good distribution pract
in the handling of this commodity. This has been done by the Fed
Security Agency (Federal Food, Drug, and Cosmetic Act of Jun
1938, as amended, 21 U. S. C. A.—301 et seq.) for the purpose of in
state commerce, which act reads in part as follows:

> (k) Where the statement does not express the minimum quantity:
> (1) Variations from the stated weight or measure shall be permitted
> caused by ordinary and customary exposure, after the food is introduced
> interstate commerce, to conditions which normally occur in good distrib
> practice and which unavoidably result in change of weight or measure.

Some State and local regulations, together with the Confer
Committee on Legislation regulation as proposed in their tenta
report, carry similar provisions to control "good distribution pract
within their respective jurisdiction. The existence of these State
local regulations where they do exist, and if enforced, would con
the subject problem fairly well insofar as the jobber and the re
store are concerned. However, there exists a basic problem involv
the flour manufacturer against which these regulations are ineffec
and which is really the prime concern of the moment. This b
problem is that of finding some ways or means to encourage the f
manufacturer to overpack a reasonable amount to take care of
shrinkage which occurs quite immediately after the weighing op
tion. Knowing well the common tendency for flour to lose moist
rather than to absorb the same, in the normal course of distribut
it would seem that the milling industry has a very definite respo
bility in this matter and should take such steps as are necessary
assure correct weights being maintained until, at least, the sale
delivery have been completed at the initial destination.

In the City of Detroit, we have made several flour surveys over
past few years, and, as an apparent result of this sustained vigila
together with a little court action, we have improved the flour-wei
situation considerably. However, our last major survey, which
completed about 6 months ago, revealed some interesting informat
which I will discuss briefly at this time.

*At Warehouse Level.* The flour reweighed, had been in transit
storage for a period of from three to four days. We examined
various brands, we reweighed 895 twenty-five-pound sacks, and

an average minus error of 2.3 ounces (approximately one-half ercent).

*Retail Level.* The flour reweighed had been in stock for a period m 3 to 4 weeks. We examined 11 various brands, we reweighed wenty-five-pound sacks, and we found an average minus error 3 ounces (approximately 1 percent).

e of the important bits of information which highlighted this y was that two of the leading national brands which constituted one-third of the volume checked, had contributed most to the ge minus error. Had it not been for the lesser known brands ng an overweight average, the average minus error would have considerably greater. In light of the foregoing information, quite reasonable to presume that we, in Detroit, have our sights the next flour weight targets.

fore concluding my introduction of the subject "FLOUR GHTS," I shall quote from the report of the Committee on ods of Sale of Commodities, 31st National Conference on Weights Measures. This report can be found in NBS Miscellaneous Pub- on M170 (1941). It reads as follows:

> . . Tolerances should be reasonable and should allow for possible nkages in weight or measure due to atmospheric or other conditions. most serious question for our consideration was the establishment of formity in the proper allowance for shrinkages. It is the consensus pinion of this committee that, for the purpose of determining the actual weight or measure of commodities, tolerance shall mean a permitted iation from the marked or indicated net content of a commodity. Such iations shall be as often above as below. Commodities which show a ural shrinkage should be so overpacked as to assure the housewife of receipt of the exact amount specified on the label at the time of sale to A uniform shortage of all packages of one commodity sold by the same ker, though within the tolerance, should not be permitted . . . .

R. RHEIN: Last year we reweighed over 5,000 bags of flour, of h 40 percent were short weight. We met with 14 representatives e milling industry to discuss the problem. Their claim that the ture content had dropped from 14½ percent down to 8 or 9 per- was refuted by the records of laboratory analysis by one of the chain-store operators who had run samples. These records ated that in no case did the moisture content drop more than percent.

e instituted, for a short time, a tolerance based upon the claims e millers, and reweighed an additional 3,000 packages. Allowing the tolerance they requested, we still found 7 percent of the d samples short of declared weight.

hereafter we allowed no tolerance. From that time on, we have no short-weight flour in Cincinnati. Flour weights are being rolled by the millers, who weigh a carload when it leaves the weigh it again on a track scale in Cincinnati. They then open ar and weigh individual packages.

uring the past year we have found not one bag of flour short in ht.

R. KENNEDY: I have been informed that, when flour is packed export, it is packed 99½ pounds in a 100-pound sack. I presume is to allow for a moisture increase during transit across the ocean. uld like to know if this is also the practice when flour is being ered in the United States.

Mr. Austin: I have found nothing that would bear out that c
tention. We have only one mill in Detroit over which we can m
observations.

I would like to suggest that the weights and measures officials
jurisdictions where flour mills are in operation maintain a c
supervision over the flour weights at the mills.

Mr. Kennedy: Mr. Austin, do you feel that some allowance sho
be made for shrinkage?

Mr. Austin: I do not think there should be any average allowa
I feel that the average net weight should be there. For an isola
bag or two, I think that there should be a 1 percent tolerance. T
is the limit of shortage or overage allowed on any individual packa
The average net weight must be correct.

Mr. Fakler: I am Vice President of the Millers National Fede
tion, which is the national trade association of the flour mill
industry.

We regard the problem of flour weights as a very serious one.
regret shortages as much as you do. Our prime obligation is
produce a product of quality, acceptable to the consumer, and
reach the consumer in the proper quantity. We also feel that
have an obligation to comply with the laws and regulations. We
feel that those laws and the regulations must, of necessity, be r
sonable, and we believe that the courts so hold.

In answer to Mr. Kennedy's question, I believe there is a pract
in export of labeling gross weight. Therefore, the actual content
flour will be less than the amount stated on the package. That
permissible and has long been the practice in export.

We are anxious to consider with you a proper solution of t
problem, and, if it is agreeable to this organization, it would be m
than agreeable to us to appoint a mutual committee represent
your organization and the milling industry to work together to f
a solution.

Mr. O. W. Gallaway: There are several factors which must
taken into consideration regarding the variations in weights. T
relative humidity is the big factor, since flour will absorb and l
moisture. In a survey in the stores in 14 States, we found that
relative humidity throughout the year will average about 48 perce

If a store has a relative humidity of 36 percent and a temperature
71° F, a 5-pound sack of flour, which has a moisture content of
percent to start with, will lose 2.1 ounces, or 3.25 percent.

In another store, with an average relative humidity of 45 perce
the 5-pound sack of flour will lose only half as much weight. Leavi
it there for 7 days, it will lose 1.94 percent of its weight.

Those are about the average relative humidities in grocery sto
throughout the 14 States in which the tests were made.

Flour in transit by carload will also lose weight. In a box car t
top sacks will lose weight, while the sacks on the floor will weigh t
same as they did when packed.

In the milling of flour, a constant moisture content is absolute
necessary. If it is too dry, the particles of bran will break off a
go into the flour. If it is too moist, the flour gums up and cannot
sieved. So flour, at the time of manufacture, is different from a
other commodity. It must, from a milling standpoint, be one co
sistent moisture and temperature at all times.

he problem is a real one, since flour is so affected by the surround-humidity. I might give an illustration. In one large store they d all flour weighing short—very much short. We refused to take flour back, and we suggested that they place the flour in a back n. After it had lain in the back room for a week, every sack was weight.

t what point would you say it was proper to weigh this flour?

n the State of California, sacks of flour were weighed each week 52 weeks. During those 52 weeks, at no time did the sack weigh the e in two successive weeks. Some weeks the weight would be up, e down.

Ve maintain that the only place to control the weight of flour is at mill. All mills are controlled and regulated by the States, both as packing and as to weights. Further, the transportation agencies e in and weigh the flour from two to three times each year. They t to get an average of what each sack will weigh. That is how freight charges are arrived at.

Ve feel that the only logical place to weigh flour is at the mill, or n it arrives at destination.

Ir. McBride: What is the moisture content of the product at the l?

Ir. Gallaway: It runs around 13½ to 14 percent.

Ir. McBride: Is that true of all mills?

Ir. Gallaway: Yes, otherwise the flour cannot be milled.

Ir. McBride: Is there a constant temperature at which you pack?

Ir. Gallaway: Usually at the mill the flour is coming out at 92° F.

Ir. McBride: If we could simulate mill conditions as to relative nidity and temperature, we could probably arrive at the same ght.

Ir. Gallaway: You would come back to the same weight as when flour was packed.

Ir. Schuster: Our city (Buffalo, N. Y.) has in recent years passed neapolis as a flour center. We do weigh flour at the mill, and o in the field. While the flour weights do vary in the field, the mill ghts are pretty fair. They have their scales tested periodically, sibly every 6 weeks.

Ir. Ackerman: Probably five or six times a year we go to the mills our district and check all sizes of packages. In the last 5 years we e had nothing but OK's for the milling companies.

Ir. Austin: Could we have a comment from the industry regard- what we know as the heart of the problem? That is, an over- k at the mill to take care of the normal shrinkage in the early ges of transportation and delivery.

Ir. Fakler: That is a problem that has been given very serious sideration by the industry. It involves, however, a number of blems. First, there is the economic problem. An overpack does rease the cost, and it will increase the cost to the consumer. There also a problem in connection with transportation. An overpack ght solve the shortages in a short distance or a short time, but the t judgment of the industry is that it does not solve the problem manently.

Chairman Leithauser: I would like to suggest that our incoming sident consider the suggestion of the industry and that he desig- e the proper committee to work with the milling industry.

## SHOULD WORD "NET" BE MANDATORY IN QUANTITY STATEMEN

By J. F. Blickley, *Director, Bureau of Standard Weights and Measures, Commonwealth of Pennsylvania*

Since our last Conference, the question as to whether or not the wo "net" be included in all quantity statements on commodities in pac age form has been brought to the attention of some weights and me ures officials for an official ruling. In Pennsylvania I have be requested on many occasions to rule on this subject; my decision h always been that the word "net" must be part of the quantity sta ment. Many other State officials have the same opinion and ha ruled in the same manner and have insisted that the word be part the quantity statement.

Unfortunately, some few manufacturers and processors of commo ties take exception to these rulings and insist that the laws are co plied with when the quantity is declared. If the language of Secti 22 of the Model Law, as revised and recommended by the 36th N tional Conference on Weights and Measures in 1951, were part of State laws, there would be no further need for discussing this subje for commodities sold on a weight basis; this section specifically defin the word "weight," and I quote Section 22 of the Model Law:

> That the word "weight" as used in the Act in connection with any commodity shall mean net weight. Whenever any commodity is sold on the basis of weight, the net weight of the commodity shall be employed, and all contracts concerning commodities shall be so construed.

This removes all doubt as to the actual meaning of the word "weigh if the word "net" were not included in the quantity statement.

Section 19 of the Model Law is also very specific in stating th "* * * any commodity in package form shall bear on the outsi of the package a definite, plain, and conspicuous declaration (1) the net quantity of the contents in terms of weight, measure, count * * *."

Many State laws were on the statute books before the Model La was revised and recommended to the various States for adoption. I States where the provisions of the law are not as specific as the Mod Law, it may be necessary to seek clarification by legislation, especial where decisions of the proper authority are disputed or ignored.

With the thought in mind of adding to the clarification of the sul ject, permit me to cite my experience.

The decision that the word "net" must be used in quantity statemen was disputed by some manufacturers. In order to settle the disput I sought the advice of our Department of Justice and requested formal opinion as to whether Section 7 of our Commodity Law mad it mandatory to use the word "net" with quantity statements. Th section of the law reads as follows:

> No person shall distribute or sell or have in his possession with intent to distribute or sell any commodity in package form, unless the net quantity of the contents shall be plainly and conspicuously marked on the outside of the package in terms of weight, measure or numerical count.

(Word for word, it is not exactly the same as the Model Law; however, th meaning is exactly the same.)

That a careful study was made and extreme caution used in deliber ations before opinion was rendered is manifested by the citations o various court decisions in the United States. The opinion cites a cas from the State of Indiana in 1890, one from the State of Washingto in 1906, one from the State of California in 1942, and another fro

State of Washington in 1913 which I think is worth mentioning art of this subject to justify our decisions.

manufacturer of a commodity, who was prosecuted under an inance requiring the net weight of the contents to be stamped on tainers, made the defense that he had complied sufficiently with the by stamping the weight of the contents when packed.

The Court in the City of Seattle, Washington, held as follows:

> * * * Many other like rulings might be cited to the effect that what he law will imply as a necessary incident is as much within a legislative nactment, whether state or municipal, as though specifically set forth in erms. And it is not a departure from such a rule to say that a requirement to stamp the net weight on a container is implied from the power to egulate weights. It is a regulation and one of the most effective in so egulating weights and measures as to reduce the opportunities for fraud nd deception to the consumer to a minimum.
>
> * * * It is not unreasonable to require that the packer and manufacturer hall ascertain this loss by evaporation as he is best in position to do, and vercome the loss by increasing the size of the package or the weight of the ommodity packed therein, or withhold his goods from the market until it s possible to ascertain the true net weight. Whatever may be the necessary ourse to adopt to enable the container to correctly indicate the weight of the ommodity it contains, it is not unreasonable to place that burden upon the ne who puts the article before the public as a sale commodity, and compel im, if he wishes to retain his trade, to so pack his commodities that the onsumer may know the true quantity of the thing he buys, and thus protect imself in paying the value of the thing he buys.

The opinion also cites the definition of the words "Net Weight" as scribed in Blacks Law Dictionary De Luxe, 3d edition 1940, which as follows:

> *Net Weight.* The weight of an article or collection of articles, after deducting from the gross weight the weight of the boxes, coverings, casks, etc., containing the same. The weight of an animal dressed for sale, after rejecting ide, offal, etc.

The opinion as rendered by the Pennsylvania Attorney General ads as follows:

> If the word "net" is omitted from the description of the quantity of a commodity enclosed in a container, confusion would arise in the mind of the buyer as to the actual volume of weight of the commodity in the package, and give rise to possibilities for fraud.
>
> The statute directs in no uncertain terms that the net quantity of the contents is marked on the outside of the package, and it follows to mark the package as to the quantity of the commodity contained therein, without including the word "net" would amount to a failure to comply with the mandatory direction of the statute.
>
> It is our opinion, and you are, therefore, accordingly advised that the word "net" must be included in all quantity declarations required under Section 7 of the Commodity Law.

It has always been my personal opinion that when the words "net ntents" or "net weight" are used in the law, it was the purpose and tent of the law to use the word "net" in conjunction with the declaran; this opinion was sustained by the ruling of the Attorney General Pennsylvania and further resolved by judicial determination.

Weights and measures officials have always construed the quantity atement to represent the net contents of the package, regardless if e word "net" was included in the statement or not.

It is very apparent that, at the present time in a few cases, statements that do not include the word "net" are being purposely misconrued as a method of evading the intent of the statute.

Wherever laws are worded properly, it may not be essential include the word "net"; however, it certainly can do no harm if i included in the statement. If quantity statements are misconstru for the reason that the existing statute of the jurisdiction is not s cific, weights and measures officials who have been delegated with responsibility of consumer protection should secure clarification.

As this has now entered the field of controversy, whenever statu are being amended or rewritten, it may be well for all weights a measures officials to include a change in their statute, making the of the word "net" compulsory in all quantity statements. It certai will not impose a hardship on any industry. It surely will relieve of another problem and will enable us to devote our time to n problems that are forever confronting us.

Mr. Kennedy: Would it not be well to amend the Model State L on Weights and Measures, by moving the word "net" in Section so that it would read, "Any commodity in package form shall b on the outside a definite declaration of the quantity of contents terms of net weight."

Mr. Blickley: That is a good suggestion for the Legislat Committee.

## STANDARDIZATION OF FOOD PACKAGES

By I. M. Levy, *Sealer of Weights and Measures, Chicago, Illinois*

Standardization of weights for prepackaged foods is not a n subject. It has held the serious attention of weights and measu officials for many years; and, while no over-all State or Natio law has been enacted, it can be said that progress has been made in general direction of standardization—notably, State and local bre laws, laws pertaining to milk containers, and those which regulate size of berries and small fruit containers. But we are far short of ultimate goal. Modern distribution methods tend more and m toward prepackaging. The old cracker barrel has long lost its p turesque place in the grocery store, and in its stead are displays brightly colored cartons of crackers and cookies. Cereals, likewi have come out of their bins and are sold in cardboard and paper c tainers, with the weights printed on each, but what a variety weights—such as 7½ ounces, 7⅜ ounces, 3⅜ ounces! The same c be said for a long list of other commodities.

Let us, for the moment, consider ordinary uncooked grain rice. one store, I found the following sized packages: 1 pound 15 ounc 14 ounces, and 5 ounces. Another example, peanut butter, a process item, the packaged weight of which is completely under the cont of the packer. Again, what did I find in the supermarkets—the f lowing glass containers: 15 ounces, 14 ounces, 13 ounces, 12 ounc 11 ounces, 9 ounces, 8 ounces, 5 ounces; and in one store, a 5½-ou jar. All of these brands are well-known, nationally advertis products.

At this point, I wish to state briefly the case for standardiz weights of prepackaged foods. It is my belief that it would be in t public interest if prepackaged food products were sold in standa units of weights and that the sale of the same prepackaged commo ties would be prohibited were they not of the weights prescribed law. By the public interest, I mean it in an all-embracing sense the processor, the packer, the wholesaler, and the retailer, as well

consumer, would be the beneficiaries of a fair, equitable, and well-
ned law. The free flow of commodities from and into all sections
ur country necessitate that the laws and regulations be on a
onal level.

he consumer, typified by the woman shopper for foodstuffs, is
stomed to buying in standard units of weights, represented by
pound or generally accepted subunits of the pound, such as ½ or ¼
nd. When a package placed on the grocer's shelf equals or ap-
ximates in size a pound container, but is labeled 15 ounces, it is
r the most discerning shopper who, by scrutinizing the label, will
the difference.

n the purchasing of packaged commodities by the consumer, there
marked tendency to buy by size, to call for a "small package of
" or a "large package of that." This is another reason why the
nan shopper should be able to buy with confidence in the knowledge
t all brands of the same item will be the identical net weight. We,
weights and measures, who constantly advocate exactness in all
nsactions by weight, must frown upon any practice which under-
es this fundamental principle. We strive by every means of edu-
on and publicity to impress upon the shopper the wisdom of buying
weight, of watching the scale, of asking the price per pound, so that
knows that she is getting all for which she pays. It is true that
leral laws require that the net weight be printed on the package,
I am sure that I need not develop a case among you gentlemen how
xing in visibility are the hidden weight markings on so many of our
kaged food products. May I mildly put it that they are not con-
ive to encouraging Mrs. Careful Housewife to watch her pounds
l ounces.

The greatest evil which accrues from lack of standardization is a
fusion in the customer's mind as to the best buy, when there are a
iety of brands of the same product and when there are two vari-
es—weights and prices. Let us give a couple of illustrations. In
store that I recently visited, there were three brands of apple sauce,
labeled 1 pound 4 ounces, priced at 19 cents; another 1 pound 1
ce, priced at 16 cents; the third 1 pound at 14 cents. Which of-
ed the best buy, quantity only considered? I will not claim this
e an intricate mathematical problem, but, on the other hand, I am
fident that the average shopper will not spend the time necessary
letermine the best value. Let us take another illustration. In the
e store, I noted two well-known brands of macaroni. One was a
unce package at 11 cents, the other an 8-ounce package at 14 cents.
ain, I ask which brand gives the most macaroni for Mrs. House-
e's money? And, again I say, Mrs. Average Housewife either
ld not or would not take the time to figure it out. Just imagine
at goes on in her mind when she is confronted with labels marked
ounces, 6½ ounces, 4½ ounces, 14½ ounces, 9 ounces, 11 ounces,
ounces, 5½ ounces. These are actual label markings taken from
ew common items which I chose at random in one store and include
eals, condensed milk, mustard, and relishes. A vast number of
mples too numerable to mention could be given.

We have noted the progress in prepackaged foods; keeping pace
h this trend is the advance of the self-service stores. Neatly ar-
ged cans and packages are stacked on the shelves awaiting Mrs.
nerican Housewife's choice. But she is strictly on her own. The

prices are displayed and the weights are on the labels; but if th weights were always comparable among brands, the thrifty shop would be in a position to determine the best value, that is, as in rega to quantity in standardized weights. This is the only practical mea by which to gain this worthy objective.

A manufacturer may discharge his legal obligations by setting fo the net content of the package on the label, but I cannot agree that it realistic or reasonable that the average housewife be confronted confused by odd and out of ordinary weights on packages. In important case, a Federal judge charged the jury as follows:

> The law requires a manufacturer to be honest in his statement of the con tents of a package containing a food product and it requires him to be hones in stating the truth of the labels put on it. It is the purchasing public, th ultimate consumer, whom the provisions of the law are primarily intende to protect. The law is not made for the protection of experts, but for th people, that vast multitude which includes the ignorant, the unthinking an the credulous who in making purchases do not stop to analyze but are gov erned by appearances and general impression. It makes no difference tha dealers in the article are not deceived. It is the probable inexperience of th customer that you should consider.

Now let us consider standardization from the seller's viewpoi Why is there such a hodgepodge of weights in prepackaged foodstuff I shall not attempt to enumerate the various reasons given, but I w relate what appear to be the most common ones. A manufacturer processor, or possibly a large retailer possessed of a desire to increa the sale of one of his items will reduce the quantity in the container that the price will be below his competitor, or he may desire to mai tain a standard price which he could not otherwise do unless the qua tity is reduced. The second reason has, of course, almost vanish because of recently widely fluctuating costs and prices. Sometimes more acceptable reason is given. A package is developed to yield certain number of servings that it may better meet the needs of t average family. Frankly, while not wishing to tangle with the expe in the field of home economics, I am not convinced that this reason a valid one, except in a comparatively few instances.

I think it is not farfetched to conclude that, in many cases of od and fractional weights, the sales, rather than the production, d partment was dominant, at least in the original weight determinatio Of course, when production facilities are once set up for certain siz and weights—ovens, forms, and filling machines—then it would costly to make changes. But in the long run, the more numerous pac age sizes necessitate larger container inventories and the increased u of storage facilities. It further means more frequent adjustments machinery. All of these factors add up to increased production cost eventually paid by the consumer.

We made a survey among some food processors and manufacture in Chicago, and, while we admit it was too cursory and localized to conclusive, I believe that there are equally as many manufacturers wh would welcome the proposed regulations as those who would oppo them. Furthermore, practically every manufacturer who was in o position gave as his reason that the present equipment could not me the proposed changes, but he did not object in principle.

Of course, I do not advocate that there be any standardization packaged foodstuffs other than that of weight and the standards s up to meet the requirements of the pure food laws. The America system of free competitive enterprise is the best system in the worl

there is still plenty of room for good aggressive merchandising if do have national standardized weight laws. Quality, consumer ference, price differentials, attractive and convenient packaging the elements, and it has been the honest and progressive use of e elements which have made our American businessmen world lers in their respective fields.

summary of objectives would be that an agency of government be owered by national legislation to strive towards ultimate standization. I certainly could not advocate that there be an abrupt sudden impact upon the American food industry.

believe that a gradual advance should be made over a sufficient iod of time for the changes, and I am thinking in terms of years. have a number of industries now who in actual practice have standized upon certain weights. When the overwhelming majority of industry produces, for example, a 1-pound package, then it should standardized and become part of the law, and those companies uld be given protection against others who would divert to unusual kage weights near the set standard. After a sufficient period of e, without dislocating any particular food industry, I believe that elimination of unnecessary and unwise packages would be aplished, and there would remain those weights which would be icient from a manufacturer's and consumer's standpoint.

This brief discussion has but opened the door to a vast and extremely portant subject. There is much work ahead. I speak with admiran for the splendid pioneer work and fine contributions made by mbers of this Conference a decade or more ago. Perhaps it was war conditions which produced the intervening somnolent attie, but I do hope that we will revitalize the whole matter, and, even ugh the road may be long, difficult, and beset with obstacles, we uld carry the torch of duty to ultimate success.

Mr. Meek: Weights and measures people all are in favor of pack standardization if and when it can be brought about. I think most familiar with the efforts made by the National Conference a num of years ago to promote food package standardization. At that e I was Chairman of the Conference Committee on Legislation. held a meeting in Indianapolis, and Mr. Blickley attended this eting as a member of the committee. I think we had about 40 or 50 lustries represented. They presented many arguments and reasons y they could not go along with the idea.

However, the Legislative Committee did report a food package ndardization bill (Report of the 33d National Conference, 1947). action of the Conference at that time, this proposed bill was left in hands of the committe for further consideration, the idea being t it would be brought out when there was sufficient public demand, when we could show that industry was in a position to go along with d package standardization.

I am wholeheartedly in favor of it. I am aware of the arguments ainst it. I am also familiar with many of the reasons why such islation would be highly advantageous to the public.

Mr. Blickley: I had the pleasure of serving with Mr. Meek on that nmittee, and some or the arguments against standardization of food ckages were somewhat ridiculous. At that time conditions were aotic in the country, and I believe the time was not ripe to put this tter in the hands of industry. I think that condition has now

passed. Perhaps it would be a good idea if this 37th National Conf ence on Weights and Measures would again revive the food packa standardization bill. I submit that as a suggestion to the Conferen

MR. THOMPSON: I would like to ask Mr. Levy if he has any su gestions from his research as to what steps could be taken towa this uniformity in packaging.

MR. LEVY: I think the first step is one of gaining public support, get the public to realize what this means in dollars and cents. I thi a very fine suggestion has been made by Mr. Blickley that this Conf ence go on record advocating that work be done toward this goal.

I have gone through the record and I find that members of this Co ference did a fine job to arouse interest. I believe that, because t time was not opportune, and the intervening war years took c attention to other matters which were more urgent, this project fell the way. I think it should be revived, and the first step is to follow t suggestion of Mr. Blickley. From that point on, we should have educational program.

MR. BLICKLEY: I will move that this Conference go on record being in favor of reviving the effort toward standardization of fo in package form, and that this matter be brought to the attention the interested parties.

(The motion carried unanimously.)

MR. BLICKLEY: Many industries at our meeting in Indianapo indicated that standardization could not be accomplished, that it w impossible. Two or three years later, the members of the flour indu try went before the States and requested that their product be stan ardized as to weights of packages. I believe that flour packages a now standard weights in some 40 or more States. If the flour indust can do this, I do not see why any of the other food industries cam do likewise.

(The Conference adjourned, to reconvene at 10 a. m. Wednesday, May 1952.)

## THIRD SESSION—MORNING OF WEDNESDAY, MAY 21, 19

(E. R. Fisher, Vice President, presiding)

### REPORT OF THE COMMITTEE ON TRADING BY WEIGHT, PRESENT BY J. FRED TRUE, CHAIRMAN

The Committee on trading by weight has found that there is co siderable interest in doing away with the weight per bushel on ma commodities.

At the present time there is some confusion in buying ear co because of moisture content in the cob. The only solution to th problem is to sell ear corn by the pound or hundredweight. A grains which are now sold by the bushel can be sold by the pound hundred weight. Grain which is re-sold to the consumer after it h been milled whether mixed or unmixed with other grains is now so by the pound or hundredweight. There is considerable difference the legal weight per bushel of apples and other fruits among t States. This error can be corrected if the bushel is used only as volume measure. The weight for a given volume of apples or fru varies with the size and condition of the fruit.

We recommend that the committee be continued, that furth study be made, and that the State and Federal Agencies be encou

to use the hundredweight rather than the bushel in their reports forecasts.

e further recommend that machinery companies be encouraged to k the rates of seeding to show pounds per acre rather than bushels pecks.

e recommend that each State introduce a bill in its next legis- re that will do away with the weight per bushel for all com- ities.

he report of the Committee on Trading by Weight was adopted by the erence.)

RESS BY E. C. CRITTENDEN, CONSULTANT TO THE OFFICE OF THE DIRECTOR, NATIONAL BUREAU OF STANDARDS

ere is proposed an international organization intended to obtain degree of uniformity in the regulation of practical weights and sures in European countries. There is already an international nization which provides for uniformity in basic standards of surement. The top body in that organization is the General Con- nce on Weights and Measures which was established by treaty in and now includes 33 countries. Under the General Conference ave the International Committee on Weights and Measures and International Bureau of Weights and Measures. The Interna- al Bureau is a laboratory located at Sèvres, just outside of Paris, ch keeps the prototype international standards and periodically pares national standards with them.

he International Bureau thus provides, internationally, a service lar to that given by the laboratories of the National Bureau of ndards in connection with weights and measures in this country, it has neither authority nor means to do anything about trade ctices in the various countries. Each country has its own weights measures service, and it has been long recognized that the diversity ractice which exists among European countries is a serious handi-

or instance, our own Mutual Security Administration and other ernment organizations which are encouraging collaboration be- en European countries to strengthen them industrially have urged removal of barriers to permit freedom of exchange of goods. Cus- s barriers are a very serious obstacle to the effective use of the nomic resources of those countries, and diversity of practice in ard to packaging, weighing, and other trade requirements add her difficulties. Recognizing that handicap, there have been dis- ions for many years of the need for some organization like yours, uding officials of the different countries, as your Conference does e of States, counties, and cities, to bring about uniformity of prac- in regulations and to remove some of the obstacles to trade across rnational boundaries.

o in 1937 the French Government called a formal international ference to consider this question. It was proposed to establish an anization which might begin by collecting information about the ious rules and regulations and then draw up model laws and regu- ons, just as you have done in this country. Finally, it might even g about joint approval of equipment, because in Europe they go h further than we do in requiring approval of types of measuring ices, and the fact that each country has its own types limits the

market of manufacturers very severely. That is particularly tr
because in Europe the same organizations usually cover not merely t
ordinary weights and measures but also gas and electricity mete
which are, of course, widely used.

The 1937 conference was attended by representatives of 37 countri
The widespread interest was evidenced by the fact that those countri
ranged alphabetically from Afghanistan to Yugoslavia. Howeve
many representatives were diplomatic staff men who knew nothi
about the subject; when they got down to real business, delegates of
countries, including all the important countries of Europe, sign
resolutions looking to the establishment of an international organiz
tion, and set up a committee to draw up definite plans for it.

Following 1937 there came various troubles. The Chairman of t
organizing committee was a Polish official. Poland got in troub
right away, the war broke out in 1939, and nothing further was do
about the proposed organization until 1948. The proposal was the
revived at the meeting of the General Conference on Weights a
Measures, but of the original 15 members of the organizing committ
only 5 had survived or retained their connection with weights a
measures.

A meeting was called for 1950; by that time the Communists ha
overrun Poland and thrown out of office the man who had been hea
of the organizing committee. So a fresh start was made with a ne
chairman, from Belgium. Ten countries were represented at the 19
meeting; 4 of the original 15 members were present. The committ
has now prepared a draft of a proposed treaty to set up an organiz
tion and it will be considered at a meeting in Brussels in October.
approved it will be sent out formally by the French Government, a
maybe in the course of a few years there will be set up an internation
organization to do, in European countries and other parts of t
world, much the same job that you gentlemen are doing here.

Whether this country should join or not is a matter to be decided b
the Department of State and the Senate. Nearly all the other cou
tries use the metric system of weights and measures. This, in additio
to our distance, the difference of our customs and requirements, a
the absence of a national weights and measures service, makes it doub
ful whether we can take an effective part, but it may be worth whi
for our country to take part, at least as an observer, to give such he
as we can, and also to see that no rules or regulations are set up th
may handicap our manufacturers or exporters unduly. If and whe
an organization develops, the details will be reported to you at lat
meetings, and presumably your advice will be sought regardi
participation in it.

## FARM HOLDING TANKS

By H. J. McDade, *Sealer of Weights and Measures, San Diego, California*

In preparing this paper, I assumed that many among you are n
acquainted with the use or the procedure employed by the weigh
and measures official in testing such tanks.

Farm holding tanks represent a great forward stride in the mea
urement and handling of wholesale quantities of commercial mil
between the producer and the processor or creamery.

At present, there are two types of these tanks in use in Californi
namely, the conventional farm holding tank and the cold-wall tan

se tanks range in size from 300 to 3,000 gallons, and I am informed t some are even larger. The conventional tank is constructed with outer wall around the stainless-steel measuring vat, allowing approximately 3 inches for insulation. The milk is cooled and aerated ore it flows into the tank. This type of tank will hold a quantity milk for about 10 hours with a change of temperature not exceeding g F.

he cold-wall, or refrigerated, tank (see fig. 1) is like the conventional tank, except that, in addition to the insulation in the walls of tank, refrigerating coils also are used. There is also a trough ning around the top of the tank with small holes through which milk trickles and is aerated and cooled right in the tank itself.

hese two types are further divided into the glass gage and the asuring-stick types, either of which is satisfactory. When filling glass-gage type with milk, the glass gage is kept closed by a valve he bottom and is not allowed to fill until the reading is to be taken. is then opened wide, allowing the milk to enter the tube with a ge, going beyond the true level and then settling back. This procure gives you an accurate reading. We must keep in mind, however, that, milk being an opaque liquid, all readings must be made he top of the meniscus and not at the bottom.

Ve have learned that, if the tube is left open and the milk allowed reep up the tube as the tank is filled, the milk will stick in the dry e, and the reading may be one graduation less than a true reading. der the present California code, which limits the volumetric value these graduations, a one-graduation error might be equal to as ch as 2 gallons for tanks having a calibrated capacity in excess of gallons. For tanks of lesser capacity the resulting error might equal to 1 gallon.

he measuring-stick type is preferred by some, for various reasons,

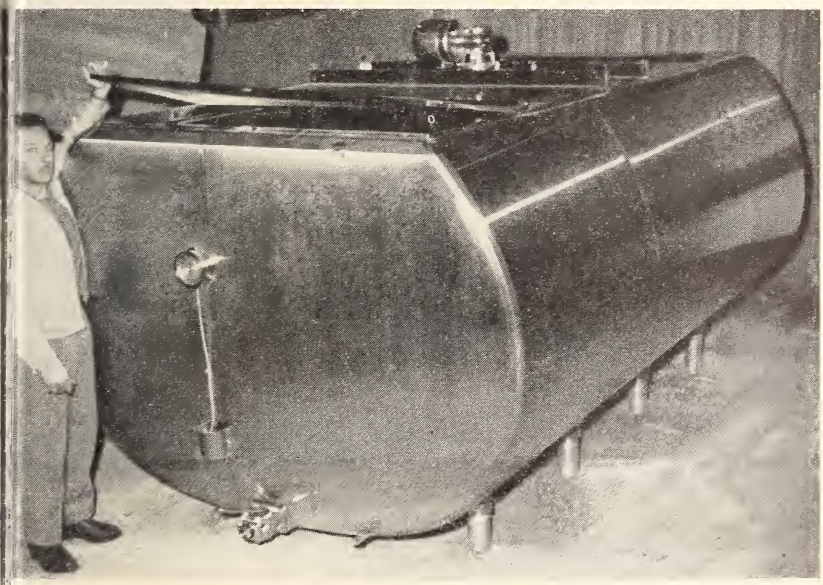


FIGURE 1. *Farm holding tank.*
Refrigerated, or cold-wall, type.

one being the greater ease of cleaning as compared to the glass ga another, the freedom from danger of breakage.

In measuring the quality of milk with the gage stick, the stick not put into the tank until the measurement is to be taken, thus obta ing a measurement of the greatest possible accuracy.

Both types of tanks are equipped with a power-driven agitat which is used to thoroughly mix the cream, which has risen to the t back into the milk, so that a representative sample can be taken a butter-fat test. It is of the greatest importance, however, that t agitator not be started until after the milk has been measured. To so would create a turbulence in the tank and incorporate air into t milk, which would result in an inaccurate reading. I might add tl all measurements are made by the driver of the tank truck, who, law in California, must be a licensed and bonded sampler and weigh

The graduations on both the measuring rod and the column gl gage are in terms of inches or fractions of an inch. The measureme on the gage is then referred to a chart that has been prepared by t manufacturer or his agent, which converts each graduation into ter of liquid measure.

Both the gage and the chart are integral parts of the tank, and ea must be carefully inspected, compared, and sealed. In testing a ta the weights and measures official compares his findings with the me uring device, whether it be a gage glass or a measuring rod, and t chart as prepared by the maker. Under no conditions does he ma the capacity indications on either the glass gage, measuring stick, chart. It is the duty of the weights and measures inspector to veri that the respective indications conform to known standard measu ments. For him to mark the graduations on the gage or chart wo be as improper as it would be for him to place or locate the weig indications on the beam or chart of a scale.

To give you a comparison of the accuracy of the farm holding ta as compared to the practice of measuring by the 10-gallon milk c method, which was universally used before the advent of farm holdi tanks, I offer you the following: Allowing for an error of one grad ation in reading either the measuring stick or gage glass, the fa holding tank will measure 1,000 gallons of milk with a maxim error of 2 gallons per 1,000.

Records of creameries show that, in California, milk purchased the creameries in 10 gallon cans averaged only 9⅞ gallons per c yet they were paying for 10 gallons. This short measure was due excess foam and dents in the cans, and equals 12.5 gallons per 1,0

No one can successfully challenge the advantage of the holding-ta method of handling milk from the point of accuracy of measureme which is, of course, our chief concern. There is, moreover, the ad tional advantage of improved sanitation in this method of handling the milk being kept at a temperature of between 40° and 50° F., m it is picked up by the stainless-steel insulated tanker, which will deli the milk to the creamery, even over the longest hauls, with a change temperature not exceeding 1° F.

When farm holding tanks were first introduced in Californ weights and measures officials were called upon to test and seal the This we refused to do, they being subdivided measures and, as su not entitled to our approval.

The milk industry and milk-tank manufacturers were persistent

r request that regulations be promulgated to legalize this method
neasurement. They wanted the feeling of security that goes with
use of weighing and measuring equipment that has been adequately
ed and sealed by a competent authority.
fter many meetings with representatives of both the milk industry
manufacturers of farm holding tanks, rules and regulations, toler-
es, and specifications were drawn by James E. Brenton, Chief of the
eau of Weights and Measures in California. Then, after a formal
ring, these regulations, etc., were approved and became effective in
ifornia.

ollowing the presentation of this paper, a number of slides were shown by
McDade and J. E. Brenton. These slides depicted various types of farm
ing tanks and testing equipments. In the discussion, points were raised
rding (1) the possibility of frost heave in cold climates, (2) the difficulty in
ining rapid and accurate readings on stainless steel gage sticks, (3) methods
astening tanks to foundations, (4) methods of testing, (5) manufacturers'
onsibilities, and (6) the possibility of sale by weight from farm holding
s.)

## THE MEASUREMENT OF PETROLEUM

By E. L. Hoffman, *Socony-Vacuum Oil Co., Inc., New York, N. Y.*

Mr. Chairman, members and guests of the National Conference on
ghts and Measures, I would like to express my appreciation for
kind invitation extended to me by Mr. Bussey to address you today
he subject "The Measurement of Petroleum." In my talk I will
uss some of the history of petroleum, the necessity for accurate
surements and also comment upon measuring practices in use
ay.

et me take you back to the first measurement of petroleum in this
ntry; to Saturday, August 28, 1859. You will recall that the first
well was driven by Colonel Drake at Titusville, Pa. On that day
Drake well had reached 69 feet and drilling had been stopped at
point. On Sunday morning, "Uncle" Billy Smith, the driller,
a look down the well and found a liquid standing in the pipe quite
the surface. He dipped some up and it was petroleum. He sent
d to Colonel Drake in Titusville and borrowed Mrs. Smith's tub
wash boiler and kept on dipping. By the time Colonel Drake
ved, every vessel at the site was filled with oil. The next morning,
onel Drake started to search Titusville for empty whisky barrels.
collected a dozen or so and rushed them back to the well, but they
e all filled by sundown. These whiskey barrels were made of
d with a capacity of 42 gallons—2 gallons of the 42 being allowed
tare or leakage. This works out to a rough "tolerance" of 2 parts
2, so you can see what progress has been made in "tolerance" since
e days.

s the news of the Drake well spread, thousands of promoters and
sans poured into Titusville, and soon hundreds of wells were
lucing oil. The problem of containers was critical from the out-
The wooden barrel was all that was available and the barrel fac-
es worked night and day to keep up with the flood of oil. But
e wooden barrels leaked more with oil than they did with whisky
vinegar, because the oil had little effect upon the wood, whereas
whisky and vinegar caused it to swell. To improve accuracy of
surement by reducing leakage, the infant oil industry attempted to
ten up the wooden barrel, thus laying the foundation at this

early date for a sustained effort for sound measurement. The Repo of the Commissioner of Patents for the year 1863 stated, "Fourte patents have been issued for more oil-tight barrels, besides as ma for tanks and cans."

As an illustration of the growth and rapid expansion of the pet leum industry, in 1920 the quantity of crude oil produced in the Unit States was 18,603,000,000 gallons, while in 1950 this quantity was 8 890,000,000 gallons or over four times greater than in 1920. If t quantity handled had been contained in a pipeline the same size as t "Big Inch", its length would be sufficient to encircle the earth abo 25 times at the equator.

As evidence of the magnitude of the demand for petroleum and products, I need only remind you that during the four days of t meeting of this Conference, the petroleum industry will measure ov 1 billion gallons of crude petroleum and then remeasure it about to 25 times on its way to the customer. The complications in many these measurement operations are considerable. There are over 1,0 various kinds of crude oil, some so thick they flow like the heaviest m lasses and some so thin they flow like water. The distance from t center of production to the center of consumption averages over 6 miles and may range as high as 8,500 miles, as in the delivery of cru oil from Arabia. Over this distance it may move by pipeline, tank barge, tank car or truck, or a combination of these methods. F each movement in each conveyance, it must be measured. It mu also be measured many times on its way through the refineries a through the storage terminals. While it will only be possible for m to describe these measurement operations in general, I direct you a tention to the fact that perhaps 90 percent of them take place, in su cession, prior to the sale to the customer and thus form a gener procedure for an over-all check of crude oil from the well to finish products in the customer's tank.

I believe you will agree that the most important single asset of a business is the good will of customers with whom business is tra acted. A company will stay in business only as long as the publ wants to buy its products. In the petroleum industry good will c be achieved by giving full and accurate measure on all sales of pro ucts which meet established specifications. In many other industri this can be effected with a minimum of effort because it consists mere of a physical count of packages of varying sizes. On the other han petroleum and its products are in such general demand throughou the world that a vast measurement problem is produced. The volu of petroleum and products transported and handled by the petroleu industry is tremendous. The vastness of the operation of the Indu try, the complexity of the measurement problem and, finally, th value of crude oils and finished products all point to the fact th special care and attention must be given to measurements to insu accurate results. If these results are achieved, customers are assure of full measure and essential loss controls can be maintained on th various phases of producing, manufacturing, transportation and ma keting of petroleum and its products.

The importance of accurate and careful gaging cannot be ove emphasized. The data secured becomes the basis for all future recor and calculations. If the original gaging figures are incorrect, it obvious that subsequent records, reports, or invoices will not balanc

ile it may be possible to trace and correct inaccuracies in gaging, represents a costly, time-consuming procedure.

ou might well ask why the members of this Conference should be rested in this subject. Primarily, State and municipal sealers of ghts and measures participate in many important phases of measg operations of the petroleum industry. In all probability, sealers ote more of their time to activities involving the gaging of petron and related products than to any other single commodity. In the nd place, one of the most important phases of the work done by National Bureau of Standards is the establishment of standards ch are used as the basis for measurements involving equipment h as calibrated containers, steel tapes, standard thermometers and r items used by the petroleum industry.

uring the early expansion of the petroleum industry, facilities for suring vast quantities of crude and products lagged in their develent. As a result, many difficulties were experienced, some of which mately reached the consumer level. Not only was there a lack of formity and procedures from one company to another, but frently this same difference was experienced in various phases of any company's operations. The inadequacy of measurement facilities ted a condition where accurate accounting for stocks and yields not possible. As a result, many oil companies realized that the blem merited special attention. In many cases this, in turn, led to formation of committees and departments within the company to dle this problem. These committees and departments were charged h duties the major purposes of which are the following: (1) Calibion of storage tanks and transportation media. (2) Design and struction of uniform gaging and sampling equipment. (3) Establment of uniform procedures in the use of this equipment.

s early as 1898 the American Society for Testing Materials had h formed, and the American Petroleum Institute was organized in ). One of the important functions of these organizations is to nulgate codes establishing uniform procedures and equipment for accurate measuring of petroleum and its products. The exchange measurement ideas and practices of the various segments of the stry is of benefit not only to the industry as a whole and the vidual parts thereof but also to the consuming public. This hange of ideas and practices has, under the sponsorship of the two ips mentioned, resulted in the issuance of the following codes ng many others: (1) API Gravity Tables. (2) ASTM Manual Measurement and Sampling of Petroleum and Its Products. (3) Code 25—Measuring, Sampling and Testing Crude Oils. (4) API e 1201—Code for Non-Pressure Type Tank Car Quantities. API Code 1202—Code for Pressure Type Tank Car Quantities. API Code 1101—ASME-API Code for Petroleum Positive Disement Meters.

ll codes and manuals, whether issued in a tentative or final form, subjected to almost constant review so that when revisions are ssary, the changes can be effected and all members of industry sed.

he basis for computing volumes of liquid quantities of petroleum its products is the incremental capacity table for the container lved in any particular transaction. Therefore, before discussing al measurement of petroleum, I would like to outline for you in neral way how the capacities of containers are determined. Ob-

viously, capacity tables must be accurate; otherwise, all subsequ calculations of volumes handled will be incorrect.

Various methods, depending on the type of container being ca brated, are employed to determine the total and intermediate cap ities of the container. In my discussion today I will consider t strapping method as it applies to atmospheric tanks with fixed ro (also known as cone roof tanks) as this is the most common type tank in use today, builder's plan method as it applies to tank shi and the liquid calibration method as it applies to barges, tank cars a tank trucks.

Basic measurements are secured by the use of steel tapes of 1( foot or 400-foot lengths. These measurements consist of height the tank, its circumference at various levels, the thickness of st plates and, when necessary, measurement of "deadwood." "Dea wood" is a term used to describe any construction detail inside of t tank, the presence of which decreases its liquid capacity. After basic measurements are secured, tank capacity tables are prepar by determination of actual volume at the various heights measur and interpolation of circumference measurements where necessa If the tank is cylindrical in shape and if all cross-sectional areas a uniform, the calculations are relatively simple. They are based the standard formulas of the area of a circle and the volume of cylinder.

On tank ships, total capacities for each tank and the volume desired levels are secured by calculation of cubical contents bas on measurements from builder's plans. Consideration is given deadwood, such as pipe lines, ladders, bulkheads, etc., and the chang in incremental volume due to changes in the shape of tanks. It is interest how this is done. An engineering draftsman with conside able experience will study the builder's plan with an apprentice, a together they will make all the necessary calculations. This m take from 3 to 6 months and the resultant calculations would app to similar vessels of the same class.

In the case of barges and tank cars, one popular method of dete mining capacities is the water calibration method. Quantities a loaded into the tanks from calibrated prover tanks. By stopping t loading operation at desired intervals and computing the quantity ou turned from the loading tank, the volume capacity can be determin at any level within the barge or tank car tank.

When tank trucks are first put into service, their capacities are dete mined by using a liquid (usually kerosene) measured from calibrat containers, the capacity of which has been certified. After the capaci of each tank has been determined, capacity markers are affixed in t proper position and the full capacity shown on the dome collar.

In general, gaging procedures involve two separate steps. The fir of these consists of actually measuring the product, and this m be done by manual or automatic means. The second step consists temperature taking, and this may also be done manually or aut matically.

In the actual gaging of most bulk-storage tanks, there are two ge erally accepted methods, namely, innage and outage. The sever modifications of each depend upon the type of tank to be gaged. A innage gage is the depth of liquid in a tank measured from the surfa of the liquid to the tank bottom or to a datum plate attached to the ta

m. An outage gage (in the case of marine equipment, called
e) is the measurement of the distance between the surface of the
uct in the tank and the reference point, which is a fixed point or
at or near the top of a tank. These measurements are used
the tank-capacity table and temperature of the product to calcu-
he volume being measured.
general, measurements are secured by the use of calibrated steel
of varying lengths in conjunction with calibrated plumb bobs.
latter have pointed ends for taking innage gages and flat ends for
g outage gages. The tapes in use in the United States conform
e tolerances and standards established by the National Bureau of
dards. Tapes not meeting tolerances are withdrawn from service.
hen an innage or outage gage is taken in a nonpressure container,
ape and bob are lowered to prescribed levels, care being taken in
ase of the innage gage to insure that the bob does not tip. On
e gages the measurement is read directly from the tape, while on
e gages the total reading is the sum of the tape and bob readings.
e procedures for innage and outage gages are basic and are those
generally. In other cases, however, special types of tankage re-
special procedures and devices to measure their contents, for
ple, the pressure lock for pressure tanks and the slip-tube gage for
fied petroleum gas containers.
l companies generally have made considerable progress in the
lopment and acceptance of uniform gaging equipment and the
lishment of uniform procedures in the use of this equipment.
example, difficulties were experienced in securing accurate meas-
ents of volatile products because of an uneven creep on the tape
b, thus resulting in inflated measurements. To overcome this, a
ine-level indicator paste was developed and is being used gen-
y today. Prior to the promulgation of standardization codes,
urements were taken to the nearest $\frac{1}{4}$ or $\frac{1}{2}$ inch. The stand-
oday is to the nearest $\frac{1}{8}$ inch, and in some companies, to the
st $\frac{1}{16}$ inch. The need for and the advisability of accurate read-
to the nearest $\frac{1}{16}$ inch becomes evident when it is realized that $\frac{1}{16}$
inch in a tank 50 feet in diameter accounts for 77 gallons, while
ank 140 feet in diameter the gallonage value of this measurement
) gallons.
the procedures in vogue and the standardization already ac-
lished eliminate the possibility of inaccurate measurements?
In the case of manual gaging, the human element is always pres-
Consequently, oil company managements must constantly stress
e gagers the importance of the care to be exercised when gaging.
me instances, flexible tank bottoms cause inaccurate measure-
s. Every effort is made when constructing tankage to insure that
ottom will remain firm and level. However, bottoms sometimes
nder varying load conditions. In such cases, accuracy will be
ly improved by maintaining a water bottom of such depth that it
cover the entire bottom when flexed either up or down. This is
in an effort to provide a level surface to measure the volume of
e or products involved. Difficulties are also experienced in secur-
ccurate measurement of the contents of floating roof tanks as the
ne of product displaced by the roof is affected by friction between
dge of the roof and the tank, by change of temperature due to
hine, by wind, rain, snow, or ice, by settling time after pumping

product into or from the tank and by partial suspension of the on its supports.

Gaging problems are considered as they arise and are subje almost continual study. In some instances, these studies in observance of the actual operation of tankage and facilities in field.

At the present time the use of automatic gages is being studie many oil companies. Many such devices are actually in use bu general, they are used only in connection with movements of li quantities within a particular company. However, if mutually ag upon, they can be used in connection with movements between the panies concerned.

One such device which has been in use for some time is called automatic float gage and consists, in general, of a float gage atta to a wire cable which, in turn, is attached to a completely encl counterweighted measuring tape which registers innage measuren and is usually read at ground level. Potential sources of error i automatic float gage include change in the buoyancy of the flo the gravity of the liquid changes, undue friction at sheaves ground-reading pulley, and corrosion and distortion of the cable. the newer equipment these sources of error have to a large extent eliminated.

Another device actually weighs the tank contents and is spoke as a hydrostatic gage. This also has the distinct advantage of viding the means of reading tank measurements, either at the of the tank or at some central point remote from the tanks themse This device generally uses dry air or gas to force the liquid t gaged out of a vertical pipe within the tank. The pressure requ to force the liquid out of the pipe is registered through a gage out the tank or at a central gaging house by means of a gage filled a special, heavier-than-water liquid. This gage is calibrated on basis of water at standard temperature; therefore, all measurem are at that temperature. By knowing the exact specific gravity the liquid being gaged, the reading of the gage can be converte exact feet and inches of the liquid at standard temperature.

Another item that must be considered in the determination of l volumes of petroleum and its products is the temperature of the t contents. Accurate temperature readings are essential as they f the basis for conversion to 60° F of quantities involved on interc pany transactions and also provide an important phase of adeq stock control.

Usually only one temperature reading is taken at the vertical ce of the product, although in some cases it may be necessary to se more readings, as specified by API and ASTM codes on this subj

When taking thermometer readings, care must be taken to in that the thermometer has been immersed in the liquid for a pe sufficiently long to attain the temperature of the liquid. Also, w withdrawing the thermometer from the tank, care must be take avoid change in the thermometer indication, which may easily caused by atmospheric temperature or wind blowing across the liq contained in the cup at the base of the thermometer. This effect be minimized by sheltering the thermometer cup within the gage l while reading the thermometer to the nearest degree.

The accuracy tolerance for thermometers, previously plus or mi 1 deg F, has recently been changed to plus or minus ½ deg F

nometers used for gaging purposes. Studies of tanks in opera- have revealed that different temperatures prevail at different s. This is especially true on tanks containing viscous materials oducts that must be heated to expedite their flow. Partially as ult of the foregoing, oil companies are turning their attention to ccuracy that might be secured by the use of automatic devices h provide the means of securing mechanically average tempera- of tank contents. In most instances, the temperature readings e taken at some central point remote from the tanks themselves. sts of one of these devices have indicated that it has a high order curacy. This device is known as an electrical resistance ther- eter, which measures the increase or decrease in electrical resist- in a fine copper wire caused by any change in temperature and ters the results of these measurements on a temperature indicator. device will operate satisfactorily when used in connection with s containing heated or unheated products.

ie whole subject of measuring and allied operations is in a state ntinual study, so that the latest available procedures can be ap- . and the accuracy and practicability of devices can be determined lecisions made as to their installation and acceptance by industry neral.

you are aware, meters used for the dispensing of liquids are an rtant phase of petroleum measurements. The first meters used converted water meters which were accurate to about plus or s 2 percent. The introduction of displacement meters and con- d experiment and development have brought greater perfection. racies now obtainable are quite remarkable. The development of er accuracy in measurements has made it possible to meet the nt tolerances required by the various State regulatory bodies. ter meters have been properly installed, by far the most important e requirement for proper operation, regardless of the type of used, is meter proving and calibrating as frequently as necessary. is important because not only must the oil company ascertain that mers of their products receive accurate measure on deliveries, t must also take reasonable precautions against overloading or leliveries. To achieve the desired results, oil companies generally tain proving equipment on mobile trucks that is of adequate size oth loading rack meters and tank-truck meters. In most instances, meter manufacturers are also equipped with mobile calibrated er equipment.

ie basic requirements for good performance in all meter installa- are that the installation shall be (1) Capable of and adapted for ate meter proving. (2) Conducive to the elimination of air apors that might become trapped or induced ahead of the meter. Provided with a suitable means of segregating dirt, scale, foreign cles, and water from the measured stream. (4) Such that iden- y the same physical conditions of equipment, liquid and operating acteristics can be maintained for the meters during their provings ill exist while they are later operating normally on the metered m.

ie use of meters has tremendously increased in recent years. This rticularly true of meters used on loading racks, pipelines, and trucks dispensing household heating oil. As the trend is toward ier increase in the use of meters, it becomes essential and most

important that the degree of accuracy required by the weights measures authorities be maintained at all times.

I have previously mentioned that a code has been issued through joint efforts of the American Society of Mechanical Engineers the American Petroleum Institute on positive displacement me This code, which is further evidence of the active interest in this ject, provides a suitable basis for the installation, proving and op tion of positive displacement meters suitable for measuring li hydrocarbons to be purchased, sold, or exchanged in the petrol industry or elsewhere. The provisions are deemed applicable to p tically all such installations. However, with respect to meters for the measurement of retail sales, the provisions of various S weights and measures regulations govern and shall take precede over this code. On one major pipeline in the South, the use of me for measuring the flow of petroleum products has become indispe ble. This pipeline transfers several petroleum products and se different oil companies. When any new product is sent through line, as, for example, kerosene, the meters are recalibrated, the calib tion taking the form of a factor that is applied to the meter read

Under certain conditions, the meters may be recalibrated as quently as twice a day. Because a meter as large as the pipeline would be uneconomical and difficult to handle, there may be thre four 6-inch meters in parallel on an 8-inch line. thus providing the n essary flexibility in operation.

The measurement of petroleum presents a serious problem to industry. The complexity of this problem, increased by the need numerous, accurate measurements, is not generally known by the c sumers of petroleum products. Oil companies and manufacturers engaged in continual research so that the most accurate procedu equipment, and devices can be applied in the measurement of pet leum. Ultimately, a large share of these measurements will undou edly be obtained by automatic or semiautomatic means.

The work of the sealers in the oil industry, which for the ma part consists of checking the capacities of various types of transp tation media, the calibration of dispensing equipment, and the est lishment of accuracy tolerances for this dispensing equipment, had an important influence on the development of accurate measu ment. Their activities serve the dual purpose of assuring the consu that full measure is received and of assuring the dispenser of the pr uct that an equitable compensation is secured for the quantit handled and sold.

## GRAIN WEIGHING

By David Lundeen, *State Weighmaster, Track and Hopper Scale Departm State of Minnesota; President National Scale Men's Association*

As this year's president of the National Scale Men's Associati I deem it a great honor to represent our spendid organization at t Conference, and I wish to take this opportunity to greet you on beh of our membership. Our annual Convention at Chicago last Mar was one of the finest and most instructive meetings ever held by o group. I feel, as I am sure all members of the National Scale Me Association feel, that we should work very closely with the Natio Bureau of Standards and representatives of weights and measu departments in matters relating to scales, in which we all have a co

interest. As far as scales are concerned, we have the same goal—
r scales, resulting in more accurate weights.
rain weighing" is, without a doubt, one of the most important
hing functions in the country. Many farmers weigh their grain
eir own scales before taking it to the local market. At the local
tor it is weighed when the producer sells the grain. It is usually
hed by the local elevator when the grain is shipped to the terminal
ets, and at the terminal markets it is weighed on arrival, as well
nen shipped out. Millions of bushels of grain are weighed within
levator itself as the grain is transferred from one bin to another.
total amount of grain that is weighed in this country and the
e of the grain are probably impossible to estimate accurately, but
safe to say that it runs into billions of bushels and billions of
rs.
the Minnesota Grain Weighing Department, we weigh approxi-
ly 500,000,000 bushels of grain annually. About 300,000,000
els of this grain are weighed in and out of boxcars. Approxi-
ly 175,000,000 bushels of grain are weighed into boats at Duluth,
gned to points on the Great Lakes and onto barges on the Missis-
River at Minneapolis and St. Paul to points south. The balance
in weighed in truck-load lots and in transfers within the terminal
tor itself. You will note the tremendous amount of grain that
ighed into boats, most of which emanates from Duluth.
w people, living in other parts of the country, realize that, from
andpoint of tonnage handled, the Duluth-Superior port is second
to New York.
might also be interesting for you to know that the largest aggre-
n of grain elevators in any one city in the world is in Minne-
s, where some 65 elevators have a total storage capacity in excess
,000,000 bushels.
e Minnesota Grain Inspection and Weighing Departments were
lished in 1885 by the Minnesota State Legislature, by a law passed
e fifth of March of that year. Under that law operations com-
ed on the first of August 1885. This law provides for the inspec-
of grain and the weighing of grain as it arrives and leaves terminal
tors. The State being rather young at that time, only three
were designated by the Legislative Act as Terminal Grain Mar-
They were Minneapolis, St. Paul, and Duluth. The law, how-
gave authority to the Railroad and Warehouse Commission,
r which these departments function, to designate other points
erminal Markets. At the present time, we have State grain
hing at ten markets.
might be interesting to know that this was the first grain depart-
of its kind, established in the United States, where inspection
weighing of grain was under State jurisdiction.
ter the department was established, grain weighing was per-
ed by Minnesota State weighers, not only in Minnesota, but in
onsin, Iowa, North Dakota, South Dakota, and as far west as
land, Oregon. Since that time, most of these States have estab-
d their own grain inspection and weighing departments, and the
nesota department now only functions within the boundaries of
State.
e first testing of scales in the State was by "Scale Experts," as
were called in those days, who worked under the supervision of
State Weighmaster, who is in charge of grain weighing. The

first so-called "Scale Expert," who now would be called a "Scal spector," was a man by the name of L. D. Berry. He was appo to this position shortly after the department began to function. commenced testing scales, over which grain was weighed, in ter elevators, early in 1889. Later, he was given an assistant, with w a great many of you are acquainted, and who has been for over a century one of the leaders in weights and measures work in country. I refer to none other than the venerable C. C. Nea Minnesota man of whom we are very proud. Mr. Neale worked u the State Weighmaster until the Weights and Measures Depart was established in 1911, at which time he was appointed the Commissioner of Weights and Measures in Minnesota. The scal spectors, however, who tested the scales on which grain and its products were weighed remained under the supervision of the S Weighmaster.

To put it differently, the Weights and Measures Department i State of Minnesota has supervision over all scales and measu devices, except railroad track scales and the other scales over w grain, its by-products, hay, straw, and coal are weighed, and on w commodities the State Grain Weighing Department issues certific of weight to the trade. These scales are under the jurisdiction of State Weighmaster. This is a common practice at most large term markets. The advantages of such an arrangement are well recogn and too obvious to require comment.

We have, in Minnesota, approximately 85 State grain weighing tions and an average of 130 State Grain Weighers. At the term elevators we have both hopper and track scales. At some eleva we have both. The hopper scales are tested with 8,000 pound known weights and, on the step-up test, to the capacity of the hop The tolerance on hopper scales is ¼ pound per 1,000 pounds.

The State of Minnesota has two State-owned Master Scales. of these scales has a 12-foot weigh-rail and the other a 34-foot w rail. These Master Scales are tested each year by the National Bu of Standards. This is a service of real value for which we are n grateful. As far as I know, these are the only Master Scales owne any one State in the Union. Our Master Scales are the only one the northern section of the country between Clearing, Illinois, Portland, Oregon.

On our track scales, not used for grain weighing, we maintai tolerance of one pound per 1,000 pounds and, on track scales used weighing grain, a tolerance of ½ pound per 1,000 pounds.

We have four railroad test cars, owned and operated by the St Two of these cars have a 20-foot wheel-base, one calibrated at 82, pounds and the other at 90,000 pounds. We also have two 7-f wheel-base test cars, each calibrated at 80,000 pounds. We make ev effort to have these test cars calibrated once every month. At perio intervals we test all the railroad track scales with both of the sl wheel-base test cars, testing at 160,000 pounds.

We have six scale inspectors in the department. Two inspect are constantly on the road with the railroad test cars. Three spectors work in Minneapolis, St. Paul, and suburbs. In Minneap we maintain a laboratory which is used by both the Weights a Measures Department and the Track and Hopper Scale Departm Here we calibrate counterpoise weights and 50-pound test weig

nspector is assigned to testing hopper scales in Duluth, where the rtment also maintains a laboratory.

e test all track and hopper scales twice a year, and occasionally often. When a scale is taken out of service for repairs, it is ted before being put back into service.

the master scales we calibrate our own railroad test cars and also ailroad-owned test cars used in our part of the country.

r railroad-track-scale test cars are moved by the railroads, free harge, to whatever points we bill them. This free service is latory, under the law.

e have 228 hopper scales at terminal elevators and 177 railroad scales, of which 64 are State weight track scales. When hopper s or track scales are used for the purpose of weighing grain, e State weights are taken, the cost of the test is absorbed in the weighing fee. Otherwise, there is a $40.00 charge for a railroad-scale test and a $15.00 charge for a hopper-scale test.

the fiscal year 1951 we made 361 railroad-track-scale tests and opper-scale tests. We effected 41 railroad-test-car standardiza-, and calibrated 729 counterpoise weights, 1,385 50-pound test hts, and 28 slings. During this year we found 60 track scales and pper scales out of tolerance.

should be noted, in this connection, that our scale inspectors do make any scale repairs. However, if a scale is found out of ance and adjustments can be made during the test by the inspector ing the scale within tolerance, that is done.

ly recently, new specifications were adopted by the Railroad and ehouse Commission, which provide that new railroad track scales lled in Minnesota shall have a minimum capacity of 75 tons ection.

tween the semiannual tests of the track and hopper scales, the in-ors are constantly making inspections of the scales used in the hing of grain. The objective, from the beginning, has been to re good scales, properly installed and maintained, regularly cted and tested, so that both the buyer and seller of grain can nfident that they are receiving accurate weights.

track scale or State weight hopper or motor-truck scale may be lled in our State until the plans for the scale and plans for the llation have been submitted to our department and approved. no railroad track scale may be removed unless application is first to the Railroad and Warehouse Commission and such application oved.

e freight charges on grain cars are fixed on the basis of the hts taken by the State weighers at the various terminal elevators. hen a car of grain is weighed, the car number, car initial, capacity e car, seals on the car, and any leaky or bad order conditions of ar are all noted in weight and seal record books which are kept e State weighers at the elevators. In addition to this, the weigher s out scale tickets, which are filed in the office of the Weighing rtment.

e weigher also makes a daily report, in triplicate, one copy of h is available, in the Weighing Department office, to the grain and the railroads. From these reports, as well as from the scale ts, the railroads take the weights on the cars on which they deter-the freight charges. In our office, all reports of the weighers are gated and posted, according to elevators, so that, if the grain

trade or the railroads desire to check the cars weighed at a parti elevator, they need not be concerned with any other reports. T the original copy of the reports, certificates of weight are typec filed in a Post Office box maintained in the office for each grain

It is obvious that business transactions, involving millions of do transpire every day on the basis of these weight certificates; and the basis of all this somewhat complicated procedure is the good properly installed and maintained, tested by the scale inspectors properly handled by the State weigher, under the supervision o State Weighmaster.

Minnesota was, as already noted, the pioneer in establishing a S Grain Weighing Department. Not only was Minnesota the first S in the Union to step into this picture, but we frankly believe Minnesota is today a leader, if not the leader, in the matter of acc weights in the weighing of one of the country's important commod namely, grain.

It might be of interest to you, gentlemen, to know that the de ment is self-sustaining and always has been since it began operat A fee is charged for the weighing of each car. The fee, at the pr time, is $2.25 for each car and $1.00 for each truck, and $1.25 for e 1,000 bushels weighed into a boat or transferred in the elevator. total fees taken in by the whole Grain Department vary from ye year, but for the fiscal year 1951–52 will exceed $1,500,000. The we ing fees alone for this particular year will exceed $700,000 and leave a substantial surplus at the end of the fiscal year.

This department, from its inception, has been under the jurisdic of the Minnesota Railroad and Warehouse Commission, consistin three elective commissioners.

I trust that the information I have given you may be of some int and value. I have deliberately given you considerable detail as t grain-weighing functions of our department. If any additiona formation is desired, I shall be glad to furnish it.

I feel and always have felt that all of us, who are in governm service, whether it be on the local level or in State or Federal ser have a duty and responsibility to perform our work in such a ma that we are a credit to the government for which we work and a benefit to the citizens we serve.

## RAILWAY TRACK SCALE TESTING PROGRAM

By J. N. Todd, *Superintendent, Scales and Work Equipment, Southern Rai System, Washington, D. C.*

I am very grateful for the opportunity to speak to you from standpoint of the railroads on the subject of railway track scale t ing. While I cannot say that I am speaking for the Associatio American Railroads, because they have not been asked to give expression of their views, I am quite certain that they will be ple by any move to better relations between the railroads, the Nati Bureau of Standards, and those agencies in the States concerned w weights and measures.

My subject is related principally to the program of testing car out by the National Bureau of Standards, and it seems most ap priate to speak of it at a time when there is such a representat gathering of weights and measures officials from throughout country. I would like to speak not only of the program as it exists

a little of its history, but also of its future. There is, in my ion, no reason to be concerned about the future of such a beneficial, a necessary, activity, but it is important to keep all of you in- ed of its function in trade and commerce; particularly those of from States where divisions of weights and measures have been p or expanded in recent years. Therefore, its future is something you should know about as you may have a part in it yourself, ther or not you actually do any testing.

is not intended at this time to make any predictions of things ome nor to imply that you will be brought into the actual testing rack scales, because I know nothing of such a possibility. I do w that, with the increased interest of the State agencies in all matters, it is well for us to consider how such an interest in track e testing may be served best. At this time, there are only two es in the country, where track scale testing is carried on with ipment other than that of either the railroads or the National eau of Standards. There are special reasons for these agencies they require the calibration services of the Bureau. Before we nto the Bureau activities any further, let us see how the railroads nto the picture, and then we can better show how necessary is Bureau's place in this most worthy enterprise.

he railroad industry is one in which scales of large capacity have hed their widest use. It is estimated that there are nearly 7,000 k scales in the country counting both those owned by the railroads by the industries. Ten to fifteen percent of these were tested ually for many years by the National Bureau of Standards in its ple testing. This will be discussed later. The railroad industry bout a century and a quarter old, and the use of track scales came after the beginning of the railroads. One of the great forward s in the field of weighing came about that time, when the Fair- ks brothers brought out their famous platform scale. I am almost e, from what I have seen, and I believe the scale men of the Bureau agree, there must be some of those original scales still in use. speaking seriously, we do have the extremes of good and bad on railroads. Usually, however, the small and obsolete scales are in only where the service is light.

he present-day test procedure is not very different from that fol- ed more than half a century ago. At that time a special car was d up and assigned for testing scales only. Today we have solid- y test cars for the same purpose weighing from 30,000 to 100,000 nds each. Test reports showing the results of testing 50 years are quite similar in many cases to those in use today, but the racy of the scales then and now makes a different story. By present standards most of the scales 50 years ago would have been of tolerance. It is reported that on one railroad a scale was roved if the error did not exceed 400 pounds, regardless of the load. It was about that time that the National Bureau of Stand- s was engaged in tests and inspections of scales of less than 10,000- nd capacity. The frequency and magnitude of errors found in es of that category led to the belief that scales of greater capacity ld have similar errors, and of magnitude in proportion to their acity. The sequel to that was for the Bureau men to follow rail- d testing of larger capacity scales, and, not having test equipment heir own, to observe the results and to inspect the scales.

Many and large errors did occur and as a consequence of these servations congressional approval was obtained for equipping Bureau personnel so that actual testing of track scales could be ried out by them. The first test equipment of the Bureau was c pleted in 1913, and before the end of that year 38 track scales v tested in four eastern States, in a sort of practice run. The res of these tests were startling, and, to show just how bad condit were, the following is quoted in part from the annual report for fiscal year ending June 30, 1914. The mention of any partic State here is no reflection on it, as subsequent testing throughout country revealed conditions equally bad elsewhere.

> Allowing for a tolerance of 0.2 of one percent, which in the opinion of t Bureau, is a fair tolerance for such scales, 80 percent of the 16 scales test in Vermont would have been rejected; on a tolerance of 0.4 of one percer 60 percent would have been rejected; and on a tolerance of 1.0 percer 40 percent would have been rejected. . . . Of the 16 scales tested at t port of New York, 75 percent would have been rejected on a tolerance 0.2 of one percent, 56 percent on a tolerance of 0.4 of one percent, and percent on a tolerance of one percent.
>
> The above results clearly show the necessity for periodic inspection such scales and indicate to some extent the great losses which may be su tained by the use of uninspected scales. As previously pointed out, t inspection of railroad track scales . . . should be taken up by or under t supervision of the Federal Government . . . for the reason that practical all shipments weighed upon them are interstate.

A second test car was secured soon after this time. During the lowing fiscal year, with only the original unit in operation, a sched of tests over a widely distributed area was arranged for the purp of obtaining the first overall picture of conditions. The Bureau adopted a tolerance of 0.2 of 1 percent, and, of the 338 track sca tested during the fiscal year 1915, 68 percent failed to pass. It mi be stated that during the succeeding 25 years of Bureau testing, percentage of track scales passing required tolerance rose from ab 32 percent to about 85 percent.

The conditions found during the first year of testing were repor to the American Railway Association, now the Association of Am can Railroads, which entered into discussion with the Bureau leadi to an agreement providing for an expansion of the Bureau's activiti In recognition of the benefits accruing to the carriers, the agreem provided for the free transportation of the Bureau test cars. La on, two standard type test cars of 40,000- and 80,000-pound capac were added and during the years that followed, frequently more th a thousand scales were tested per annum. In addition, all mas scales were calibrated on approximately an annual basis.

In general, this procedure was followed for many years without a great variation, until the second World War, when activities were c tailed for several reasons. First, the two standard test cars of 40,0 and 80,000-pound capacity were disposed of because it was felt that t purpose for which they were bought had been served. Also, the sho age of personnel and the obsolescence of one of the original testi units further reduced the extent of the testing activities. While ste have been taken to improve conditions in some ways, the service h not yet returned to anything like that existing prior to the last Wor War.

It might be well to explain briefly here what the practices are, wi respect to the testing procedure of the National Bureau of Standar

how the annual schedule is arranged. The main purpose of the reau's work with railroad track scales is to calibrate the 19 master k scales of the country annually, insofar as possible. The second , and of almost equal importance to the first, is to calibrate indi- ual test cars in those areas where master scales are not easily avail- e. Unfortunately, there are two large areas in the country without ster scales, and there are some railroads in other areas which own cars but find it difficult to send them to a master scale. In both of se cases test cars are calibrated by the Bureau as well as can be done, ig the best track scale available. The least important activity, but that serves a good purpose, is sample testing of track scales. In anging the schedule each year, an effort is made to select those scales recently tested so as to get a broader picture of scale conditions erally. The way is left open, however, for special requests.

The schedule when prepared is submitted to the Association of erican Railroads, and by it to the member roads involved. Some nges are usually made, and when approved, copies of the schedule distributed to all concerned. Then the Bureau's test units start on their circuitous routes to cover the country. Points of inter- nge between railroads are indicated on the schedule and each road otified when the equipment is approaching its point of connection. ually a railroad representative is present at all tests, and should, hout fail, be present at the calibration of a master scale.

The same statement of purpose that I have given above in my own guage may be stated more concisely and authoritatively by quoting following paragraph from one of the Bureau's annual reports of ck-scale testing:

> The National Bureau of Standards functions as an agency of the United tates Department of Commerce. Two of its fundamental responsibilities re to provide industry and commerce with authentic weighing and meas- ng standards and to pursue such measures as are helpful in assuring that ll weighing and measuring operations essential to trade and transporta- on are performed on a uniform basis and with acceptable accuracy. The ailway track scale testing service is the instrumentality through which he Bureau fulfills these important responsibilities to the rail transporta- on industry and to interstate commerce where the wholesale marketing nd distribution of materials are conducted in terms of carload weight nd involve the utilization of several thousand railway track scales.

That, in my opinion, is an excellent statement of the high purpose which the railway track scale testing service was originally tituted.

Now that we have seen the equipment on its way, let us follow it a master scale. All master scales are quite similar although of ferent makes and models. Usually they are housed in heated and ntilated buildings in order to have the most uniform and favorable nditions under which to seal cars and to calibrate the scale. It is portant also, to the Bureau representative, to have such conditions, the job of calibration is a tedious one and one requiring great e. Sometimes, when adjustments are required, the calibration re- res as much as three days. The scale platform is usually 12 feet g, and the scale has a sensitive weighbeam, with 2½-pound grad- ions generally. The master scale has a capacity, usually, of 100,000 nds.

The equipment used by the Bureau is in a large car similar to a lroad baggage car and consists principally of a generator set, an ctric overhead crane, and a set of 10,000-pound weights totaling

80,000 pounds. This includes an electrically driven test truck, wh with an added weight, equals one 10,000-pound unit. The o weights are placed on the test truck, and the test load is move various positions on the weighrails. The car has end doors and crane can be extended beyond the doors so as to transfer weig from the interior of the car to the scale platform.

Ordinarily the calibration of a master scale comprises three se rate tests, each being conducted with mass standards of high p cision. The first phase is called a maintenance test and is to de mine whether the required qualities of performance have been ma tained since the preceding calibration. For this test, standa weight loads of 40,000, 60,000, and 80,000 pounds are applied to scale, in two successive test runs, at each of five positions on the s rails. If any adjustments or other modifications are necessary, scale is then given an adjustment test. In this case, the loads ra from 30,000 to 80,000 pounds by 10,000-pound increments, the p cedure being the same as before. If no adjustments or modificati are necessary, the maintenance and adjustment tests are combin The tolerance for the adjustment test is one-half that of the ma tenance test, and runs from 3.7 pounds at 30,000 pounds to 6 pou at 80,000 pounds. To show how accurate a master scale is, the 6-po tolerance at 80,000 pounds is comparable to a 160-pound tolera under the same load on an ordinary scale. The third phase of c bration consists in testing the counterpoise weights.

Most of the class one railroads perform their testing with their o test cars, the weighing being supervised by weighing and inspecti bureaus representing all the railroads of an area or region. The sa bureaus supervise weights from private scales along the line, a these scales are tested by the railroad, usually on a free basis, if t weights are used for revenue billing. Such scales are covered weight agreements and weights may be used only so long as the sc is kept in good weighing condition. The test cars thus used are seal on master scales calibrated by the National Bureau of Standar In this way, the standards of mass are transmitted to industry a commerce throughout the areas served by the railroads.

From these facts you can readily see how important is the servi rendered by the National Bureau of Standards to interstate co merce. It is, in my opinion, one of the greatest services national in the field of weights and measures. But it has not recovered fr the letdown of the second World War, and the condition of our tra scales reflects that letdown. The percentage of scales found accura bears an inverse ratio to the volume of testing by the Bureau. T results last published by the Bureau showed a definite drop in t curve following the curtailed service. Railroad officials have alrea expressed themselves to the Bureau as favoring a return to a high standard of service. Many favor a return to the full service render prior to the last World War.

Another matter that would be of help to the program of testing one that presents a problem not easy of solution. That is the ne for Master scales in two important areas of the country. One of t areas comprises all of the New England States plus New York an New Jersey. The other area includes Texas and its neighborin States.

May I say to you gentlemen that your interest in this matter the public interest. It may be true that you, as representatives

ic weights and measures departments, do not take active part in ng railroad track scales. But you should be informed on the ect and my efforts today have been directed toward that end. are the authority on the subject of weighing in your jurisdic- and some day you may be called on for information. You are ted to come and observe the calibration of our master scales, and testing of our track scales. May your knowledge grow and may find occasion to help in this worthy enterprise.

uring the third session of the Conference three guests representing the onal Bureau of Standards were presented. Dr. Lyman J. Briggs, Past ident, National Conference on Weights and Measures, and Director Emer- National Bureau of Standards, greeted the delegates and made a few ex- oraneous remarks regarding the progress of weights and measures ad- stration in the United States.

. Wilmer Souder, Consultant Physicist, National Bureau of Standards, tioned a recent survey in Costa Rica which he had made at the request of U. S. Department of State to study the problems of standards and training will fill their exact needs.

. A. T. McPherson, Associate Director, National Bureau of Standards, who ctly supervises the activities of the Office of Weights and Measures, was ented to the Conference and spoke briefly.

he conference was adjourned, to reconvene at 10:00 a. m., Thursday, May 952.)

n the evening of Wednesday, May 21, an informal party was held at the dman Park Hotel, the Conference headquarters, for those attending the erence.)

## URTH SESSION—MORNING OF THURSDAY, MAY 22, 1952

(Erling Hansen, Vice President, presiding)

### REPORT OF THE COMMITTEE ON WEIGHTS AND MEASURES EDUCATION, PRESENTED BY CHARLES MORRIS FULLER, CHAIRMAN

he formidable obstacle that confronts too many weights and meas- s officials is lack of sufficient manpower and equipment to do a rough job. This is not only disheartening to the conscientious ial, but it is most unfair to the people of his jurisdiction who are vented from receiving the protection to which they are entitled.

miserly attitude toward departments of weights and measures is e economy—another example of "penny wise and pound foolish"; money expended on this kind of law enforcement is a dividend- ing investment, saving the taxpayer many times its cost.

fficial recognition was given this problem 2 years ago at the 35th ional Conference, when your Committee on Weights and Measures ication was directed to make a study on budgetary procedures. e object of the study was to establish a yardstick, based on indis- able facts and figures, that could be used in support of budget uests for legitimate needs.

Our first undertaking was to accumulate a large fund of relevant in- nation. This was accomplished by corresponding with 127 of- ls, representative of both large and small departments, and located all sections of the country. They supplied the answers to our stions concerning personnel, equipment, and what they estimated s needed in order to thoroughly cover their respective territories.

he genuine interest and spirit of cooperation on the part of those tacted was proof that here was a subject close to their hearts. It

gave an added incentive to our efforts to produce a comprehens report of practical value.

Last year, the first portion of the report was ready for the 36th tional Conference. All pertinent facts, comprising over 800 ite were tabulated and the charts presented, together with an explanat of the same and a review of the work to date.

Since that time, an intensive study has been made of those statist and opinions. Your Committee has prepared a number of reco mendations for your consideration. In arriving at these conclusio we have had the valued assistance of W. S. Bussey, Ralph W. Smi and a considerable number of leading officials. We express our sinc thanks to them.

In considering the matter of personnel, I think that we will agree that weights and measures should be a full-time job. A lot harm has been done in some sections where an inspector or sealer appointed in every little town. It is merely considered as a ve small political plum. The salary does not amount to much, and lit or no work of real value is done. The general public in those pla has a pretty low opinion of weights and measures. A number these communities should join together and maintain one efficient partment that would function throughout the year, or the work shou be done by the State.

There are certain factors that must be considered in estimating t personnel needed for any particular district. An area that is heavi industrialized will require more time and effort than one that is most rural. Therefore, any numbers arrived at, based on average requir ments, will be subject to some degree of modification.

In general, one inspector should be allotted for each 50,000 popul tion or major fraction thereof.

The official in a small jurisdiction who carries on by himself nee to make some arrangement by which the public can contact him. Th can be provided by setting a certain time each day for taking care his office work, when he would also be available for visitors and tel phone calls. When he is in the field, calls could be transferred to neighboring office, where a memorandum would be made of the nam and numbers for his attention on returning.

Considerable thought has been given concerning economies in oper tion that can be effected in the larger departments. Although this true so far as the routine inspection work is considered, we must recog nize the fact that there are also heavier responsibilities. The larg department will usually maintain equipment for testing motor-truc scales and large-capacity meters. The State generally handles thi work for the small departments that cannot justify the expenditur for their limited operation. There is also a greater ratio of com plaints to investigate and prosecutions to institute in the large cities We feel that the general formula as stated above should be used.

While on the subject of personnel, we might well enumerate severa principles that have much to do with the successful operation of weights and measures department.

The members of the organization should be under some form of civi service and not be dependent upon politics, either at the time of ap pointment or for tenure in office. You cannot give fair, impartial en forcement of law and regulations if you are controlled by politica influence. Neither can you have efficient inspection service in a highly

hnical work if trained and experienced men are going to be sacri-
d every time there is a change of administration.

The chief and his staff should devote their entire time and energies
weights and measures, and not be burdened with other duties.
ey should also function as an independent unit of government and
be under the direction of a superior whose main interest and
npathies are with some other activity.

Salaries at the present time, in far too many places, are less than
"prevailing wage" for other positions whose responsibilities and
ies can be considered in the same rank. This must be remedied.
u will not attract the desired type of men, who will stay with this
vice for a career, if they are underpaid. Competition, today, is too
n.

The question of salary range is one that deserves, and has received,
great deal of careful study. The step-advancement plan, which
ovides for annual increases in salary over a period of years, has
monstrated its worth as an incentive for continuous service. Pro-
ion for several grades of employees in the larger departments, the
gher grades being filled from the lower ranks by promotional exam-
tions, acts to encourage the ambitious man who is striving at all
nes to do a better than average job.

Here is how one of the larger departments is set up. The entire
ganization is under civil service. Entrance is at the lowest grade
ere the men work under close supervision. They may drive one
the heavy-duty weight trucks and handle the weights for the senior
puty in charge; or they may assist in large-capacity meter tests.
e important thing is that, while they are assigned to the heaviest,
ghest part of the job, they are also given an opportunity to learn.
might be called a trainee period.

When there is a vacancy in the next or intermediate grade, a pro-
otional examination is held, and the trainee has a chance to step up
that position. He is still under the supervision of a senior deputy,
t is doing such work as assisting in the testing of scales in retail
res and markets, or gasoline pumps in service stations.

Then, when there is an opening for a senior deputy, this is filled
a promotional examination open to deputies in the lower ranks.
ost of the positions are in this classification. They are trained,
perienced men who are capable of handling any situation that may
se in the field.

There are also two complaint deputies who work with women
opping investigators, following up complaints about short weight
measure, securing evidence, and prosecuting violators in court.

The department is divided into two sections one being scales and
ights, and the other, gasoline and liquid-measuring devices. Each
under direction of an assistant.

A five-step salary schedule is in operation. The employee receives
base salary on entering each position. This is automatically in-
eased every year until the top of the grade, the fifth step, is reached.
some places, a six-step plan is used; others have three or four.

In studying the salary situation, your Committee has made a survey
salaries paid in governmental positions of comparable duties and
sponsibilities. It has also been mindful of wages paid by industry.

The following are recommended as minimum amounts to be paid
nen first entering that grade of work, with automatic increases

to take place at the completion of each year of satisfactory se until the maximum is reached. By "minimum amounts," we that no salaries should be less than those stated. There will und edly be some places where, owing to living conditions or other siderations, entrance salaries will be higher. As a rule, there spread of 20 or 25 percent between entrance salaries on the first and those on the last step.

| Personnel | Minimum entrance salary a month |
|---|---|
| **Departments (20 or more employees)** | |
| Trainees | $250 |
| Intermediates | 275 |
| Senior deputies | 320 |
| Chief deputy | [a] 450 to 550 |
| Department head | [a] 500 to 650 |
| **Departments (10 to 19 employees)** | |
| Deputies | $250 to $320 |
| Chief deputy | [a] 400 to 445 |
| Department head | [a] 500 to 545 |
| **Departments (less than 10 employees)** | |
| Deputies | $250 to $320 |
| Chief deputy | [a] 350 to 395 |
| Department head | [a] 400 to 495 |
| **Departments (1 man)** | |
| Sealer or inspector | $300 to $350 |

[a] Depending on size of department.

We believe that the above recommendations are equitable and line with present prevailing wages for comparable positions. Tl should enable us to recruit men of excellent caliber for this valua service.

The subject of standards and equipment is thoroughly handled National Bureau of Standards Handbook 26 (chapter 14 and appe dix III). No better guide can be found.

A station wagon will provide good transportation for all-arou inspection work, especially for the small department.

Expenditures for maintenance and operation will vary great according to the nature of the jurisdiction—industrial or rural, co centrated or scattered, occupying a small or large area. Thus, find one department, in a compact area, where the maintenance a operation will be only 12 percent of the salary budget. Anoth department, operating over wide stretches of territory, will requi as much as 30 percent. The percentage for State departments usually greater on account of more travel expense. No set formu can be established. Provision should be made to fully take care the actual expense of operating sufficient equipment to enable t personnel to cover the work of the jurisdiction.

Capital outlay, of course, will depend upon the needs of a pa ticular department. It will be large for the department that is ju

ting a start and needs almost everything; small for the depart-
nt that is well established and requires mostly replacements of work
ipment. Every effort should be made to keep abreast with the
ogress of industry by acquiring the type of inspection equipment
t will take care of these new demands.

The Report of the Committee on Weights and Measures Education was
animously adopted by the Conference.)

## PORT OF THE COMMITTEE ON LEGISLATION, PRESENTED BY R. E. MEEK, CHAIRMAN

CRETARY'S NOTE.—The text of the Model Regulation for Package Marking Re-
uirements, which was tentatively adopted by the Conference, is not included
n this publication. Upon request, the full text of the Regulation is avail-
ble from the Office of Weights and Measures, National Bureau of Standards,
Washington 25, D. C.)

The principal activity of your Committee on Legislation during the
st year had to do with a study of existing regulations designed to
e with problems relating to informative and correct net-content la-
ing of prepackaged commodities. As a result of these studies, your
mmittee is prepared to propose the tentative adoption of a regu-
ion as authorized by Sections 7 and 19, Form 2 of the Model Law.
First, and by way of background, your attention should be called
the resolution adopted by the Thirty-Fourth National Conference,
ich proposed the appointment of a Special Committee on Uni-
m Regulations. This committee was duly appointed and reported
both the Thirty-Fifth and Thirty-Sixth National Conferences rela-
e to its studies and recommendations. Among the recommenda-
ns made and accepted were two of particular interest with respect
this report.

The first of these two recommendations was to the effect the Na-
nal Conference should adopt a model regulation, paralleling the
gulations promulgated by the Federal Food and Drug Administra-
n, for the guidance of those States authorized to adopt such a
gulation under provisions of their weights and measures laws.
nce so much of the work of weights and measures officials in the
ckage field concerns food products, the importance of uniformity
ween the Federal Food and Drug Administration's regulations
l any model regulations to be adopted by this Conference cannot
overemphasized.

The second recommendation pointed out that the Committee on
iform Regulations was a temporary and not a standing Commit-
, and for this reason should be discontinued and its field of ac-
ity assigned to the Legislative Committee with authority to draft
l offer for adoption such model regulations as may seem desirable
l consistent with the Model Law.

With the adoption of the report of the Special Committee on Uni-
m Regulations by the Thirty-Sixth National Conference, which
ort contained the two recommendations just referred to, your Com-
ttee on Legislation accepted the new responsibility. It proceeded,
its initial effort along this line, with the drafting of a proposed
tative regulation providing for informative and correct net-content
eling of all prepackaged commodities.

The proposed regulation, with the exception of the legal terminology
nd at the beginning and end of the regulation, which the Commit-
on Legislation is offering for your consideration, was taken largely

from the regulation promulgated about ten years ago, under autho of the Texas Net Container Act. It is our understanding the Te regulation has proven to be very satisfactory in that State in cop with problems relating to informative and correct net-content la ing of prepackaged commodities.

The suggested regulation was carefully drafted to cover all p packaged commodities and, at the same time, not conflict with ex ing State and Federal food and drug regulations. To avoid confli which would certainly jeopardize enforcement, it was considered visable to use, in many instances, the same language as was found the Federal regulations. The importance of uniformity between Federal regulations and the proposed model regulation was not ov looked during the time this matter has been under consideration the Legislative Committee.

The enforcement of a regulation, modeled after the Federal F and Drug Regulations, would benefit from the departmental ruli and court decisions handed down over a period of several years. Si a considerable number of States have enacted food and drug legis tion and adopted regulations virtually identical with the Federal F and Drug Law and accompanying regulations, weights and measu officials would benefit from the cooperation to be expected from St and Federal food and drug officials if informative net-content lab ing to be enforced by them is in agreement with existing regulations this character.

Your committee has brought the proposed regulation to the attent of the Federal Food and Drug Administration and a number of St food and drug officials, with the suggestion it be advised wherein regulation is not in harmony with existing Federal and State n content-labeling requirements. Since no conflicts have been poin out, the committee is of the opinion no serious ones exist.

The proposed regulation requires that the name of the manuf turer, packer, or distributor appear on the label or labeling of all p packaged commodities, as well as the business address of such ma facturer, packer, or distributor. It requires a statement of net c tents on all prepackaged commodities, establishes reasonable var tions or tolerances to be allowed, and makes exemptions as to sm packages. All of these provisions are set out in necessary detail.

(The Committee also gave consideration to a Bill in the House of Represe tives of the United States Congress, H. R. 7128. This is a bill to permit transportation in interstate commerce, under certain conditions, of packag food products without having shown on the labels thereof, the net contents such packages. The recommendation of the Committee follows:)

The committee does not recommend approval of this bill as, in opinion, if the bill were enacted into law, it would prove inefficie unworkable, and undesirable for the following reasons:

1. At the present time the Secretary of Agriculture has only limit jurisdiction over packaged foods as his jurisdiction is limited to fr fruits and vegetables and to meats and meat food products moving interstate commerce. This bill, if enacted, would lead to divid responsibility as to the labeling of a given product. In other wor the Food and Drug Administration would have the responsibility the correct labeling of the product in all respects except the weig declaration on the package which would become the responsibility the Secretary of Agriculture.

. Enactment of this bill would have the effect of repealing certain visions of the Federal Food, Drug, and Cosmetic Act relating to eling of food products.

. Enactment of Federal legislation of this character would make ifficult, if not impossible, for the various States to enforce their sting laws which require all prepackaged commodities to be labeled ndicate net contents at the time of sale or offer for sale.

. The provision in the bill requiring the tare weight of the packag- material, container, or wrapper to be placed on the package is vorkable because the variations in packaging materials would make mpractical, if not impossible, to provide an accurate tare weight each package.

. Enactment of this bill would result in shifting responsibility for urate quantity labeling from the manufacturer or processor to the ailer and, at the same time, deprive the retailer the protection now orded him by accurate quantity labeling in the buying and selling ommodities packaged by the manufacturer or processor. In other ds, the retailer, upon receipt of a shipment of prepackaged com- dities, would have no way of determining if any shortages found him were due to normal shrinkage, to conditions which normally ur in good distribution practice, or were actually shortweight at time shipment was made.

. Existing Federal legislation covering the net-content marking food sold in package form in interstate commerce is adequate, and activities of State and local weights and measures officials plus activities of the Federal Food and Drug Administration and vari- regulatory officials provide adequate protection to the consuming blic.

. Any additional requirements designed to give greater protection he consuming public in the interstate shipment of food should be de within the framework of existing laws.

The Report of the Conference Committee on Legislation was adopted by the ference. This action included tentative adoption of the Model Regulation Package Marking Requirements.)

## OUR WORK IN THE FIELD

By Alfred Di Piero, *Superintendent of Weights and Measures, Camden, New Jersey*

Weights and measures has, as we know, been in effect and practiced one manner or another ever since man has existed on this earth. attempt to explain the prehistoric methods of weighing and meas- ng and other supplementary systems is not within my scope. Mine o describe to you briefly a part of the activity of the most important in this great weights and measures profession, the man in the field. By the man in the field, I mean that individual who actually goes every day equipped with his standards, be they weights or meas- s. It is fair and just at the outset that I point out just how portant this man in the field really is in the overall picture of ghts and measures. He is the ultimate judge of any quantity ermination. He is the man who places the weight, regardless of , on the scale, the liquid in the measure, and the package on the e, to adjudge trueness and accuracy. He is the man who detects cheat, presents the case before the court, and is constantly under watchful eye of the public, because he is the man whom they see, ually carrying on the work.

We may view with pride the tremendous progress that has be made, and is still being made, in the field of weights and measur The basic foundation for 90 percent of this progress which involv changes in engineering, in the laws, and in the methods, is the result the inspection of equipment, under actual operating conditions, l these field men. The snags that they encounter in the courts, a the response of a scale or pump when a test is applied, are the elemen that bring out whether a law is applicable, or an article is fit f use as an accurate measure. The reports of these tests and inspectio eventually find their way to these National Conferences, the final li in a vast chain of cooperation that is prevalent and so necessary maintaining a uniform system of weights and measures throughou the nation.

Our profession, you must agree, is one of the least publicized, mo forgotten, and least appreciated in the government, be it city, count or State. It is a fact that, in most cases, the only time our wo is viewed with any concern is when the purchaser encounters us a place of business, actually applying the standards. It is then th the person becomes aware of our existence and views us with quizzical attitude, an attitude that seems to hang between the honest of the merchant and the mystery of the standards that we handl It would be one of the greatest opportunities for public relatio if we could then and there give a short instruction on our wor the customer's alertness, and the dealer's obligation, instead of pe mitting someone to leave the scene, totally oblivious to the importa operation that was taking place. Occasional newspaper items a read, passed on, and forgotten. Talks explaining our work, togethe with displays before civic groups, are a creditable and instructiv means of bringing out our importance, but the viewing of me operating under actual conditions is one of the best means of sellin weights and measures. Our potentiality as an agent of informatio as a missionary, or an instructor, is great, due to our contacts with th people who are affected by our work.

It makes no difference what your title on the statutes may b whether you represent State, county, city, or township; whether yo are an agent, inspector, superintendent, or assistant; the work i the field, in carrying out the plans and designs that are made by th governing bodies, is equally important. The assignments in the fie are not easy, physically or technically. The inspection of an ordinar gasoline station presents the task of carrying a test can filled wit gasoline, weighing close to 50 pounds, from the pump to the under ground-tank pipe, for every test that is made. The ordinary statio having three pumps will mean a minimum of six trips if ther are no discrepancies, the maximum being dependent upon the result of adjustments. The calibration or meter test of tank trucks present a dangerous and unpleasant task, dangerous in the climbing abou the trucks, and unpleasant in the grime and wear and tear on clothing Then, too, there are heavy-duty scales, which demand the utmos of physical exertion in every test. I enumerate these activities wit the purpose of reminding you who do the actual work, the reaso for a certain tired feeling that seems to prevail every midafternoon

Officials, whose work confines them to the office, perhaps may fee that they are not playing an important part in these various opera tions. Accurate records of activities are one of the most importan

rts of a well-organized department. The uniformity of the work signments, proper cataloging of territories, the dissemination of formation to the public, and many other details that must emanate m the office are projects that call for careful attention. The two signments, field and office, go hand in hand in cooperation, both rking in the interest of proper enforcement of laws most vital to public today.

If you are one of these men assigned to a branch of the work that is avy, dirty, or unpleasant, do not feel that you are just another hired nd or one of the forgotten. You are a most vital part in the weights l measures organization, and you should take a rightful place in the ganization, realize your responsibility, and apply yourself accordgly. Without you and your intense interest in the work, we would have the glowing reports of activities to present to the legislators, periors, and to the public at the end of each year.

We too often underrate our efficiency and responsibility in the work l perhaps neglect to put forth thoughts or ideas that may bring ut a worth-while improvement in conditions. These suggestions always appreciated and should never be underestimated. I know many fine conditions in the State of New Jersey which are the ult of accepted suggestions from men in the field. Only this year, extensive legislative program was presented to the State legislative lies after conferences between the divisional heads and officials m the various municipalities. Each bill was discussed, and, where essary, changes were made. After the bills had been presented, entire weights and measures personnel was notified to contact their resentatives and to apprise them of the importance of the legislan that we had presented. This recognition of the importance of d men, even in the legislative phase of departmental activities, is nething that should never be overlooked or disregarded, for they are integral part of a great department.

Your work is demanding and has a dignified tradition. This dignity uld be maintained and guarded with an intense regard, if we are to ther the cause of weights and measures. It would be beneficial if, m time to time, we take an inventory of ourselves. Are we applyg ourselves wholeheartedly to our job? Are we establishing better derstanding among the dealer, the official, and the public? Are we public relations agent that we should be? Lastly, and this is portant, do we treat with respect the people with whom we deal? casionally, we should check our qualifications. Can we, with conence, perform every detail in the category of weights and measures? n we accurately test the drug weights and glass graduates, and the ious meters? Can we apply tolerances where necessary, and make hnical recommendations with confidence? These are items that efficient officers should be able to carry on, regardless of their place the departmental enforcement setup.

You are the most important cog in a fine set of gears, operating a hly precisioned machine. If you are not perfectly fitted to this r, or if you are a trifle out of alinement, the entire machine is own askew. This indeed would be catastrophic and would curtail honorable profession. Therefore, it is important that the link ween the field men and the superiors be one of everlasting duration, hough at times the conditions may be trying.

Sometimes the titular office is a political football. This is indeed fortunate and should be eliminated. There may be other strained

conditions brought about by events over which we have no cont
We do always have one consolation. Regardless of such exigenci
our work is one of honesty, and, as long as we perform it in an hon
sincere manner, time will solve the rest of our problems.

Be fair with yourself in your application to your work. Be und
standing and courteous to those whom you serve, honest and uprig
in your dealings with your superiors, and relentless to those w
attempt to destroy the rules that you enforce.

Lastly, if you have a weights and measures association, and eve
department should have one, you should be interested in its activiti
Attend its meetings, air the mutual problems, and discuss matters th
may tend to bring about better conditions. Support the legislati
programs that are proposed from time to time.

I appreciate this opportunity to appear on this Conference progra
and to deliver this brief talk on one of my favorite subjects.

## SALT LAKE CITY AND ICE CREAM

By E. C. Westwood, *Sealer, Department of Weights and Measures, Salt La
City, Utah*

In November of last year the Salt Lake City Commission revis
the Weights and Measures Ordinance by the addition of a new Secti
known as "Section 6638 Ice Cream and Related Frozen Food Produc
to be Sold by Weight." This law was to become effective in May
this year.

During the interim, between the time the law was written and ma
public and the time it was actually to become effective, the Utah I
Cream Association entered into the picture and strongly protested i
adoption. It was their contention that a weight law governing th
sale of ice cream would be impractical and would impose upon th
industry an almost impossible task in attempting to comply with su
a law. In the first place, they argued, ice cream is packaged by han
and the process, to a great extent, is guess work. As each carton
filled the operator cuts off the flow. For one individual to contin
this process hundreds of times each day and arrive at an exact weig
in each carton would be impossible.

Another problem, industry argued, was that involving the differe
solids used in the various flavors they are required to produce. Th
basic flavor is normally vanilla, and the addition of other ingredient
such as fruits and nuts, increases the weight. This, they conten
would necessitate the marking and weighing of each carton after
is packed. The ingredients used by the different manufacturers ar
the volume of overrun varies in each brand. In order for each manu
facturer to pack a certain weight (depending on the overrun and th
ingredients used) he would, of necessity, be required to order co
tainers of a size to hold that desired weight. His competitor, usin
a different base and overrun, would be required to order container
of a different size to pack the same amount of ice cream. This, the
argued, would not only create a serious problem for them but woul
bring many headaches to the weights and measures inspectors.

The problem of temperatures of the different freezing units th
ice cream is kept in, from the time it is manufactured until the time i
is actually consumed, was argued and also the element of shrinkag
These arguments and others were used by the Association represent
atives toward convincing the Commission that the law was impra

ıl. It is not my desire to burden you with drawn-out details of se arguments. The pros and cons of argument have been given y exhaustive treatment, and there are voluminous records on the ject. While there has been much public demand, as directed to ghts and measures agencies, for the adoption of sale by weight, en the final showdown comes, the public does not put in an appear-e. The result is the Association representatives usually prevail. n our particular fight in Salt Lake City we were a little disap-nted in the retail dealers who have always backed us and encouraged sale of ice cream by weight. When the chips were down they did come forth and support the proposition as we had hoped they uld. After many weeks of constant interruptions by the Associa-n members the Salt Lake City Commission secured withdrawal of law which had not yet been in actual operation. The arguments ntioned above had considerable weight on the ultimate action of the y Commission, but their strongest point, in my opinion, was the t that Salt Lake City is only one of many distributing points for ir product in the State of Utah, and that to have a weight law in lt Lake City and not elsewhere in the State of Utah would create efinite hardship on the industry and would slow down the efficient eration of dispensing their product. In addition there would be expense involved in marking and labeling of cartons and the ngeover required in machinery. This point was strongly stressed the Association.

n November of last year, when we were successful in having the e-of-ice-cream-by-weight law passed, we were elated and proud to nk that Salt Lake City was the first municipality to pass such a ulation. It was felt we had started the ball rolling toward our imate goal of ice cream by weight in the State of Utah, and eventu-y in all of the 48 States. This, gentlemen, is still our goal. Public mand for the sale of ice cream by weight is becoming more pro-nced each day. More and more retailers have adopted this method l the public is becoming more accustomed to purchasing ice cream this manner. The old factor of custom, which has been so expertly ounded by the Association in their opposition to this law, is be-ning a lesser consideration. The argument of lack of proper ma-nery and weighing devices can no longer be considered a threat to ultimate goal. Modern weighing devices and machinery have, in ent years, completely tabooed this argument. Sale by weight will ablish equity between manufacturers and dealers and will promote esty in the dispensing of this product.

n 1925 V. F. Hovey, then president of the National Association Ice Cream Manufacturers, in his remarks to the 18th National nference on Weights and Measures, stated: "* * * the in-stry believed that the public was only interested in buying ice cream volume." Whether this statement was right or wrong, I cannot say. all probability, the public had not actually given it much thought. nce 1925, however, many industries have streamlined their packag-; and merchandising methods. This has been especially so in recent rs, since World War II. Many of these changes have been made by lustry because they could see where modern packaging equipment ld better protect and better display their particular product, mak-; it more acceptable to the public. Many of the modern changes e also been made because more rigid laws have been adopted by

our respective States. Ultimately, of course, the aim is to prov
better protection for the public.

It was my hope to give to the Conference, at this time, a report c
ering the law after it was in force and to give you the reaction of
public and the dealers to it. I still think, regardless of what the As
ciation representatives say to the contrary, that it will be highly
ceptable to the public, and that weights and measures departme
will receive nothing but favorable comment from it. Although,
my knowledge, there are presently no laws in the United States wh
require the sale of ice cream by weight, the efforts of the weights a
measures inspectors toward encouraging such method of sale is be
felt. There are many localities in the United States today where
tail dealers are advertising and selling by weight and are doing
with good reaction from the public. This program has been going
in Salt Lake City for the past three years. The retailers using t
method advise me that public reaction to it is excellent, and the cc
plaints regarding measure received are practically nil as compared
the complaints they received when they were dispensing ice cream
volume. This is also true so far as our own weights and measures
partment is concerned. In the retail establishments where this pol
has been in force I cannot recall of one complaint that has come i
our office regarding short measure. With this type of reaction I c
not help but feel the ice-cream-by-weight law will soon be a reality
many localities. The sale of ice cream has been one of the bigg
headaches with which weights and measures departments have b
faced, the reason being that we have not had proper laws and reg
lations to control it. I, for one, want to eliminate this difficulty, a
I am sure this can be accomplished through the combined efforts
all weights and measures departments.

If you agree with my thoughts on this subject, may I take this
portunity to offer a few suggestions, which, incorporated with yc
own thoughts and ideas, will help all of us toward reaching our desi
goal. (1) Every time a newspaper reporter walks into your off
give him something to write about on this subject. (2) Whene
you are asked to talk on Weights and Measures bring this subject i
your discussion. (3) Give a word of praise to the dealers in your a
who are using this method, and encourage others to do so.

All these things go toward informing the public of the advanta
they derive from this method of sale. The public generally does
give much thought to matters of this kind, because of the old est
lished custom. It is second nature for an individual to walk into
favorite ice cream parlor or fountain and request ice cream by t
quart or by the pint. With proper publicity, through the medium
our local newspapers, and the combined efforts of weights and me
ures inspectors and dealers, this habit can be changed. When t
public is once convinced of the value they receive from sale by weig
and the necessity for legislation to control the sale of ice cream, o
problem will be solved. It is the desire of all weights and measu
officials, I am sure, to protect the public in its purchases of ice crea
It is the right of the public to expect this protection. Industry h
the protection of experts; the public is entitled to protection by la

## ET-WEIGHT MARKINGS OF PACKAGES AND CANS OF TOBACCO

G. H. LEITHAUSER, *Senior Assistant Superintendent of Weights and Measures, Baltimore, Maryland*

One of our inspectors, in the regular course of his work, reported me that packages and cans of tobacco were not marked as to the t weight of the contents. As a result of this report, I wrote to . S. Bussey, Secretary, National Conference on Weights and Meas-es, as follows:

> Do you consider the Government tax stamp on the outside of cans of Granger and Model tobacco as complying with Weights and Measures Laws which say that ". . . it shall be unlawful to keep for the purpose of sale, offer or expose for sale, or to sell any commodity in package form, unless the net quantity of the contents be plainly and conspicuously marked on the outside of the package in terms of weight, measure or numerical count, etc." These tobacco cans do not show any net weight statement on them, except the Government tax stamp which shows that the contents of the cans are either 14 or 15 ounces.

As a result of my letter, I received a reply from M. W. Jensen, ssistant Chief, Office of Weights and Measures, National Bureau Standards. Mr. Jensen advised that Mr. Bussey was out of the y. He stated further that he had investigated the matter and had scussed the problem with a representative of the United States ureau of Internal Revenue, who advised that the tax-stamp declara-n literally indicated that the quantity contained was not more than e weight printed on the stamp when the product left the factory. r. Jensen stated that apparently the practice of the industry is to dicate no net quantity upon the exterior of the can and to depend on the tax stamp to serve in lieu of a quantity declaration. This ems to be a practice of long standing. It was the opinion of the ffice of Weights and Measures that such labeling might be question-le under strict interpretation of the provisions of the Model Law. On receipt of this letter, I wrote the various tobacco companies as llows:

> Our Inspector reports that you are shipping packages and tins of tobacco o this jurisdiction not marked as to the net weight of the contents in the package.
>
> Your attention is invited to Article 20, Sections 16 (a) and 16 (b) on page 9, ordinances relating to weights and measures, a copy of which is enclosed.
>
> Please advise us promptly what steps will be taken by your company to correct this condition.

I received replies from the various tobacco companies, the sum-ary of these replies being about as follows:

> Our pipe smoking tobacco containers do not have any statement of the weight of contents printed or lithographed on the tin containers. All such containers, however, which leave the factory and which are shipped within the continental United States bear United States Internal Revenue Stamps affixed according to law across the top opening of the container. Such stamps state the weight of the contents of the package to which they are affixed. We believe that the presence of the excise tax stamp on the pack-ages of tobacco is being accepted by States, having laws similar to the law of Maryland, as being the net weight declaration of the contents of the package.

From the above, you can see that the problem involved here is as tlined in my first letter to Mr. Bussey. Does the Government tax amp on the outside cans of tobacco comply with weights and meas-es laws on declaration of net content of packages?

If we decide that the Government tax stamp could be construe a net weight declaration, then all the weights and measures offic who have the power to do so should adopt a regulation condoning t practice. If, on the other hand, the Conference feels that there sho be a definite net weight statement on the packages and cans of bacco, I would propose that we give the tobacco companies one yea which to exhaust their present supply of lithographed cans.

I might state here that most of the tax stamps on cans of Gran and Velvet tobacco are covered by the lid of the can. That port not visible includes the weight indication. Such weight indicat does not appear on the outside of the package.

If we decide that the tax stamp does constitute a net weight ma ing, as required by law, I suggest that Liggett and Myers Toba Company be notified to paste their tax stamp completely on the c side of the package so as to comply with the law.

I have an open mind on this subject as to whether or not the stamp should be construed as a net quantity declaration, but I f that, for the sake of uniformity, all jurisdictions should settle t question at this Conference, if practicable.

Mr. O'Conor: I am representing the P. Lorillard Compa manufacturers of smoking tobacco. Our position is this. We f that the Internal Revenue stamp is sufficient to protect the public, a we feel that another declaration on the can would serve merely to c fuse the public. In addition, it would be a needless duplication.

To substantiate our contention, I refer you to the last paragraph the report submitted by your Committee on Legislation, in which th say existing Federal legislation covering the net content marking food sold in package form in interstate commerce is adequate; a that the activities of State and local weights and measures offici plus the activities of the Food and Drug and various regulatory o cials provide an adequate protection to the consuming public.

Tobacco tins are made in Baltimore, for example, by the Fede Tin Company, for many sellers of tobacco. Those tins are th shipped empty to Winston-Salem, North Carolina, Richmond, Louisville, wherever they are to be packed. Since the can manuf turer would be unable to designate which cans are to be shipped int given jurisdiction after having been filled, we feel that Mr. Leithau is perfectly correct when he says that we should have a uniform poli You gentlemen should decide either that the public is protected by t present declaration on the Internal Revenue stamp, or that somethi else is needed. It would be a terrific hardship and burden on t tobacco people if a special declaration were required in only one two communities and not throughout the country.

You might be interested in the regulations of the Internal Reven Department with regard to the stamps which must be placed on t bacco tins. They provide that the packages must contain up to 15, or 16 ounces. Then they say that manufacturers are required put up their tobaccos, etc., in certain packages, and in no other mann A statutory package of tobacco means a package which contains on that article upon which the tax has been paid and no other substan or thing. The contents of a statutory package must be limited to t net number of pounds or ounces of tobacco or snuff, etc., indicated the stamp affixed to the package.

think you will agree that tobacco men are not going to pay for a ounce stamp if they are only going to put 14 or 15 ounces of tobacco the package.

I am sure you will agree with Mr. Leithauser that the companies ve been very conscientious in giving the exact weight in the package at is indicated by the stamp on the outside.

If you feel that the Internal Revenue Stamp, which states the net ight, the net weight only, is not sufficient to protect the public, I uld suggest that this be considered. It might be possible to have the ernal Revenue stamp contain a trifle more information.

At any rate, our basic position is that the public is not being con-sed or deceived by the present practice, and that needless duplica-n would result if we changed that practice.

Mr. Kennedy: I do not agree with Mr. O'Conor that the Internal venue regulations protect the public. He used the word "limited." imited" means that they cannot go above the weight indicated on e stamp. It says nothing about giving less than that weight. How-er, we are having no trouble with tobacco, and they are being con-entious about putting the weight in. As long as they do that, I commend that we leave them alone. When they fail to do that, let pass a regulation which requires a marking on the can.

Mr. Blickey: It has been an accepted practice throughout the ates, and I know especially in Pennsylvania, that we recognize the ederal stamp as a declaration of contents. However, I am certain it a violation not only of the Pennsylvania law, but of every other law hich states that the net content must be declared on the outside of e package.

I would suggest that we place this subject in the proper committee, t them study it for a year, and bring it before the Conference next ar, when a final decision can be made. In the meantime, we should ntinue to recognize the Federal stamp as a content declaration.

Mr. Ragland: I am Executive Secretary of Associated Tobacco anufacturers, located in Washington. We are a trade association hose members manufacture every type of tobacco product sold in ie 48 States of this country and in many other countries throughout ie world.

Unlike most commodities, tobacco is under control of a govern-ental agency from the time the leaf is first sold by the farmer until ie consumer purchases the finished product. Even the grower of bacco, in most instances, is controlled as to the amount of acreage e may use in planting his crop.

My purpose in being here today is to submit, first, an explanation f why the Federal Internal Revenue excise tax stamp is suitable and mple indication of the net weight of a package of manufactured bacco at the time of its removal from the factory and, secondly, to equest that this Conference adopt a resolution accepting this evidence f tax payment as satisfactory compliance with those ordinances and ws requiring net weight markings on packages of tobacco.

Section 2100 of the United States Code and the definitive regulations ssued by the Commissioner of Internal Revenue provides:

> All manufactured tobacco shall be put up and prepared by the manufacturer for sale, or removal for consumption, in packages of the following description and in no other manner: (a) Size . . . .

This subparagraph sets forth the weight denominations cover net weight contents of packages of tobacco.

In Section 2002 of the code you will note that:

> The Commissioner shall cause to be prepared suitable and special stamp for the payment of the tax on tobacco and snuff, which shall indicate th weight and class of the article on which payment is to be made.

Article 52 of Regulation 8, which implements this section of code, states:

> Each package containing a statutory quantity of tobacco or snuff shal before removal from the bonded factory premises where made, have affixe thereto the proper internal revenue stamp or stamps of such denominatio as will cover fully the tax on the net weight of the contents. . . .
>
> (a) Every package containing 16 ounces or less of tobacco or snuff mus be tax-paid by affixture of a single stamp of the proper class an denomination.

Article 110 of Regulation No. 8 reads in part as follows:

> Manufacturers are required to put up their tobacco, snuff, cigars an cigarettes in certain packages and in no other manner. . . . The content of a statutory package must be limited to the net number of pounds o ounces of tobacco or snuff, or the number of cigars or cigarettes, indicate by the stamp affixed to the package. . . .

In addition to the aforementioned controls, Article 41 of Reg lation 8 requires every manufacturer of tobacco or snuff to keep book in which is entered daily an accurate account of the quantit of the different kinds of manufactured tobacco and snuff produce removed tax-paid, or in bond for export or for use as sea stores, withdrawn without payment of tax for use of the United States. addition, this record must indicate the value of all stamps purchas and used. Severe penalties are prescribed for those failing to comp with these requirements.

If this were not enough to exact compliance, please consider th economic aspect. I shall not dwell on this point because surely yo can understand why tobacco manufacturers would not pay for an affix to packages of tobacco revenue stamps of larger denominatio than is actually required by the net weight involved.

The ordinary conduct of interstate trade is complex enough witho making matters more difficult. All sensible people are sympathet with the objectives of your assignment. The days of "caveat empto are outmoded, and that is only proper in this age of enlightenmen Likewise, you officials who are charged with public trust of protectin the consumer against unscrupulous purveyors should adopt a realist attitude in the fulfillment of your duties. Tobacco manufacturers ar honorable businessmen, and I ask you not to place hobbles on the merchandising flexibility. I urge you gentlemen to advocate th acceptance of the Federal Revenue Tax stamp as *prima facie* evidenc of the net weight marking on packages of tobacco.

(At the conclusion of the discussion, a motion was made, seconded, and adopte that the matter of content labeling of packages and cans of tobacco be referre to the Conference Committee on Legislation for consideration and recon mendation.)

## SALE OF PEAT MOSS

By T. A. Carter, *Supervisor, Division of Standards, State of Washington*

We in the State of Washington, as well as persons in other States o the United States, feel that some regulatory action should be take

garding the packaging of peat moss. We have felt that such action uld be desirous, and that industry needs some legitimate packaging ndards, particularly in reference to baled material. There are rtain companies who put out baled peat moss that has a compression io of 2½ to 1, and the size of the bale is 36 by 18 by 20 in. (outside asurements), and that is quoted as a standard bale, and is sold as ch. Other companies make a smaller bale, and a little shorter, in th length and width, and compress it much less, and this is also sold a standard bale.

We have thought of drawing up regulations regarding the sale of at moss, but before doing so we have communicated with other States ative to this subject. Some States favor weight markings, and some vor measure markings. It seems that most of the States that are st concerned, and have made somewhat of a study of the subject, feel statement of quantity in connection with peat moss, should be in ms of cubic content, that is, 7 cubic feet, 5 cubic feet, 3½ cubic feet, ., with the additional stipulation that the volume as contained in e respective containers be compressed in a 2 to 1 ratio. The reason r favoring a statement of cubic content rather than by weight is due the fact that weight markings in this instance can be used for the rpetration of fraud because of the high moisture content.

Of course, it is to be realized that there are a great many factors to considered, and no doubt any set of regulations or laws that may adopted will meet with objections from many sources.

I am at this time presenting the subject of peat moss markings to is Conference for consideration. I am sure that any action taken by u will meet the approval of the States.

(Discussion of the Sale of Peat Moss was deferred until after the presentation the recommendation of the Conference Committee on Methods of Sale of Commodities. This will be found on page 58.)

## WIPING CLOTHS

J. E. Brenton, *Chief, Bureau of Weights and Measures, State of California*

It is the opinion of the weights and measures officials of the State of lifornia that the attempt on the part of certain persons to legalize e sale of wiping cloths by gross weight was an endeavor that, had it ceeded, would have jeopardized every principle of honest merchanising, principles upon which the economic foundation of every civild nation is based. A future argument could well be presented and fended that fruits and vegetables should be sold based on the weight the contents and wooden crate; bulk grain in cars sold on the basis the combined weight of the grain and car. These possibilities may nd ridiculous, but I assure you that arguments in favor of selling uits, vegetables, and coal on the basis of gross weight are just as fensible as were the arguments that were advanced in an endeavor perpetuate the mistake that we, as weights and measures officials, re permitting to take form by our lackadaisical attitude with respect those dealers of wiping cloths who insisted on selling their product the basis of gross weight.

In the State of California, a bill was introduced in the State Legisture, the provisions of which permitted the lawful sale of wiping ths on the basis of gross weight, meaning that the basis of settlement uld be the combined weight of contents and container. This pro-

posal actually passed the Assembly of our State Legislature, but were successful in preventing any further advance.

The proponents of this bill used three principal arguments. They were:

1. The weights and measures officials of the State of California were alone in their requirement that wiping cloths should be sold on the basis of net weight, and, as a result of what they claimed was a lone effort to enforce net weight, the dealers in the State were being penalized because they could not economically compete with out-of-State dealers who were offering wiping cloths at a lower cost per pound based on a weight that was a gross weight. Also, when wiping rags were shipped into the State for resale, in containers bearing a statement of quantity in terms of gross weight, we could not require that the containers be remarked with a statement of quantity reading in terms of net weight. It was also stated that the different agencies of the United States Government purchased their entire requirement of wiping cloths on the basis of gross weight.

We countered these respective contentions by writing to the weights and measures officials of twenty different cities and States, inquiring as to their acceptance of gross weight in lieu of net weight in connection with the sale of wiping cloths. Without a single exception, the answers supported, without equivocation or reservation, the stand as recommended by the National Conference, that wiping rags should be sold on the basis of net weight.

A request was made of the Attorney General of the State of California for an Opinion as to whether or not we could require that a statement of quantity in terms of net weight be placed on a container of wiping cloths shipped from out-of-State to California for re-sale in California, and also whether or not we could require a dealer in California to sell wiping cloths on the basis of net weight, wiping cloths that he had purchased in another State on a basis of gross weight.

The Attorney General supported our Bureau in both instances. The containers, when offered for sale in California, must bear a statement of quantity in terms of net weight, and the sale itself must be on the basis of net weight. (Copies of this Opinion may be obtained upon request to Mr. Brenton.)

Mr. Bussey, our National Secretary, air-mailed a copy of Federal Specification DDD–W–415, and the provisions as contained in this particular specification definitely refuted the claim concerning gross weight purchases by Federal agencies.

The prompt replies of twenty State and city weights and measures officials, the provisions of Federal Specification DDD–W–415, and the favorable Opinion from our own State counsel all combined in blocking any additional vote gaining, on the basis of the arguments that I have noted.

2. The Office of Price Stabilization would not permit the industry to sell on a net-weight basis due to the fact that the price as established by that agency was on the basis of gross weight. This opinion proved to be the opinion of one man and was not supported by the Washington office of the OPS. Again, through the cooperation and assistance of Mr. Bussey, this argument was quickly and definitely refuted.

3. Their third, and final, contention was that the weights and measures officials were permitting the sale of wiping cloths on the basis

gross weight throughout the United States, and the practice should be disturbed.

Our reply was to the effect that we were not employed to perpetuate stakes, and that the sales of wiping cloths must be on the basis of weight.

As an example of a sale by gross weight, we shall offer you the lowing:

A county purchasing agent in a county in California ordered fifty pound cartons of wiping cloths. The actual net weight of these cartons averaged 46½ pounds, an overcharge of 3½ pounds per ton, making a total overcharge of 175 pounds. One hundred and enty-five pounds at 25½ cents per pound equals $44.62. You can ll imagine the hue and cry that would have been raised had an oil mpany deliberately short-measured this county 223 gallons of gaso- e, which is the quantity that $44.62 would purchase at 20 cents a llon.

When ordering a bale or carton of wiping cloths, you specify "white ping cloths" or "colored wiping cloths." We do not construe or cept the burlap wrappings to be either a "white wiping cloth" or a olored wiping cloth," and have insisted that the weight of such rlap wrapping and tie wires be considered as part of the tare.

As previously mentioned, we are of the opinion that the effort to galize the sale of wiping cloths on the basis of gross weight was an ening wedge, and, because of this probability, we could not afford to mpromise in any manner, shape, or form.

It is probable and possible that, in the future, efforts will be made, her through the medium of legislation or adoption of regulations, legalize the sale of wiping cloths by gross weight.

As your associates and coworkers, the county and State weights d measures officials of the State of California urge you to fight any ch move without compromise.

(The Conference was recessed until 2:00 p. m.)

## FTH SESSION—AFTERNOON OF THURSDAY, MAY 22, 1952

(J. Fred True and R. D. Thompson, Vice Presidents, presiding)

### REPORT OF THE COMMITTEE ON METHODS OF SALE OF COMMODITIES, PRESENTED BY J. G. ROGERS, CHAIRMAN

*Preamble.*—Your Committee on Methods of Sale of Commodities esents its report for consideration and such appropriate action as e Conference may decide upon in relation to its several sections. he principles, purposes, and policies under which this Committee nctions have been explained in former reports and we believe are w well understood. They are accordingly not being recounted here. The attention of this Committee was focused upon the following ms since the last Conference. Our recommendations in relation them, as now offered for your consideration, represent what we em to be reasonable, fair, and proper solutions of the problems en- led in these various issues, as to methods of sale.

1. *Soap (Bars and Cakes).*—Should be sold by numerical count and e number of bars or cakes in a package should be stated on the out- le of the package in a plain and conspicuous manner, provided, wever, that where a package contains only one bar or cake of soap ch declaration or statement should not be required; and provided,

further, that these stipulations shall not apply to medicated soap required to be marked by weight under the Federal Food, Drugs and Cosmetic Act.

NOTE.—This item which had developed controversy after being given what was assumed to be final action by the 34th National Conference was reopened at the 36th Conference in 1951 and after debate was referred back to your Committee by vote of the Conference, for further study and reconsideration. Your Committee now offers the foregoing recommendations for final adoption.

2. *Ice Cream and Ices on Sticks.*—Novelty items of ice cream and ices frozen on sticks and sold in package form shall have the quantity of contents declared in terms of avoirdupois net weight or in terms of net volume by fluid ounces.

NOTE.—The 36th National Conference adopted a recommendation that these novelty items of frozen products when sold in package form "shall have the quantity of contents declared in terms of avoirdupois net weight."

This was presented as Item 9 of your Committee's report with an appended note of basic reasons for the requirement. Subsequent to that Conference the interests most directly affected made representations to this Committee to reopen the subject for further consideration, as it was their belief that while we had acted in all sincerity of purpose, we were possibly not in possession or had knowledge of all facts in relation to this issue, which could affect the decision we had reached. Consistent with adopted policy, a review of the subject was granted and the Committee then launched a research of all phases involved. The resulting determinations were such as to conclusively show that there are many technical ramifications and other factors related to the issue with which we were not familiar, and that our original recommendation to the Conference was premature.

Consequently what first appeared to be a simple matter to settle became one of considerable proportions and through the further facts we have gathered has impelled this Committee to now offer the recommendation that the action taken at the 36th National Conference on this item be rescinded and that the following recommendation be adopted in substitution:

Ice Cream and Ices on Sticks.—Novelty items of ice cream and ices frozen on sticks and sold in package form shall have the quantity of contents declared in terms of avoirdupois net weight or in terms of net volume by fluid ounces.

This now makes declaration by volume permissive, and for which full justification has been found.

In the interest of brevity the many technicalities and phases entering into our findings are not incorporated in this report but can be made available to any member of the Conference who desires to review them.

Among the salient reasons that influenced our final decision are:

(a) That public interest will best be served by the modification of a restrictive requirement which if confined to weight would influence and impose an increase in cost on a popular commodity.

(b) That consumer economy can be adequately protected by a simple displacement method of test to determine the quantity by volume in items of this kind.

(c) That it will remove any nuisance factor inherent in this issue.

(d) That it will permit a method of sale with which all manufacturers can readily conform without difficulties that would increase the cost of production.

(e) That the industry will systematically and fully conform with State approval requirements in relation to the molds and forms it uses as measuring media in the production of novelty frozen desserts.

(f) That the industry has rendered full cooperation in the efforts to reach proper conclusions on this issue and manifests intention to maintain high ethical standards in the operations of their enterprises.

3. *Peat Moss in Package Form (Tentative).*—The following shall govern the production, packaging, and sale of this commodity.

## I. Packaging

) Peat moss shall be put up in packages of the following sizes dimensions only.

| ctual capacity of package | Allowable size in package | | | | | |
|---|---|---|---|---|---|---|
| | Length | | Width | | Depth | |
| | Maximum | Minimum | Maximum | Minimum | Maximum | Minimum |
| *cubic feet* | *in.* | *in.* | *in.* | *in.* | *in.* | *in.* |
| ---------- | 41 | 39 | 25 | 23 | 22 | 20 |
| ---------- | 40 | 38 | 21 | 19 | 21 | 19 |
| ---------- | 37 | 35 | 20 | 18 | 19 | 17 |
| ---------- | 30 | 28 | 18 | 16 | 15 | 13 |
| ---------- | 16 | 14 | 11 | 9 | 16 | 14 |
| ---------- | 19 | 17 | 10½ | 8½ | 6 | 4 |
| ---------- | 13 | 11 | 8 | 6 | 6 | 4 |
| or less---------- | (a) | (a) | (a) | (a) | (a) | (a) |

n be sold in uncompressed or compressed form, provided content in cubic feet and degree of com- n are clearly marked on package.

) The ratio of compression on peat moss in package form shall ot less than two to one.

) There shall be an allowable tolerance in cubic content not to ed 3 percent of the stated package volume.

## II. Labeling or Marking

ll packages shall be plainly and conspicuously marked with the ntity of contents in terms of cubic feet and/or fractions thereof, ther with the ratio of compression, as, for example, "Contents 7 c feet", "Compression not less than 2 to 1."

## III. General Requirements and Exemptions

eat moss prepared by a process of briqueting, pelleting, or extru- , with a compression ratio in excess of 5 to 1, shall be sold on a ght basis with no limitation on size of package.

pecialty products from peat moss, such as asparagus pads, floral es, floral moss, insulating boards or batts or other specialized ns or preparations, shall be exempt from these recommendations.

TE.—The proper method of sale for this commodity has long been a trouble- problem to weights and measures authorities. The production and sale eat moss has greatly expanded since the subject was first brought up in hts and measures channels and your committee believes there is now a al opinion that our Conference group should take definite action about it out further delay.

ere has been considerable study given to this topic by quantity regulating orities in various sections of the country, and the recommendation now sub d represents the consensus of those who have conveyed their determina- to us.

rst consideration was given to the possibilities of a weight requirement. The y hygroscopic nature of peat moss with its great moisture loss and regain rs influenced the rejection of this thought, as it was quickly recognized that veight method would lend itself to the perpetration of fraud. Such method l only be invoked with the stipulation of complete dehydration, and this in obability would be prohibitive from a cost standpoint.

le by dry measurement in elements of the bushel and its subdivisions was considered, but this too presented problems and obstacles that made this od unfavorable.

Quantity representation by cubic measurement as now proposed would ap
to offer the solution which will serve the interests of all concerned and the
that can be most simply applied without fear of detrimental results.

There is one factor in our proposal that possibly could be further explored
that is in relation to the compression ratio. The two to one ratio as recomme
represents the determinations of your Committee up to the time of preparing
report. There may be practices of packaging within the industry with w
we are not familiar and which might influence a revision upward or downwa
the compression factor. What we propose in this connection at this tim
believe to be reasonable and adaptable. It is in the nature of a standard o
for packaging and would give us something to start with by way of regula
pending any representations from the industry that would justify an altera
To provide for such contingency we, therefore, believe that tentative adopti
the recommendation would be advisable at this time and final adoption be
complished with or without changes at the 38th National Conference.
would at least place the industry under notice that peat moss has received t
ment in weights and measures channels, so that it can anticipate and prepar
adjustments within its enterprises.

Your committee recommends the tentative adoption of this ite

Mr. Graham: We are possibly the largest importers of peat n
operating in the United States. The proposed measurements
completely at variance with a very big share of the industry. N
of the many millions of bales imported has been marked with wei
or volume. If there is a method of exact measurement, it would
a great boon to the industry. However, I do not believe that
regulation as offered here should be forced onto the industry with
further consultation and consideration of the machinery now in

Chairman True: The recommendation is for tentative action,
the problem is to be taken under advisement until the next Confere

Mr. Endress: We are perhaps the largest American produce
horticultural peat. In this discussion you must discriminate betw
the different types of peat. The term "peat moss" includes
product put up in bales and also the product we package in b

The latter is more of a peat humus. It is a natural organic mate
and cannot be compressed. We package it in bags and sell it
volume or weight—whichever is desired. However, we think t
in making rules or regulations, you will have to discriminate betw
the different types of peat.

Mr. Turnbull: The Federal Trade Commission defines peat n
as sphagnum peat moss. That is the item before the Confere
Does your product come within this definition?

Mr. Endress: That is a question involving horticultural definit
In one bog we have sphagnum peat, but it is mixed with all of
other types of peat and loses its identity after a certain period
decomposition.

Mr. Carncross: Sphagnum peat is a peat humus. It is produ
in many points in the United States. I do not think it is inten
that this regulation will apply to peat humus. A Federal regu
tion requires that the term peat moss be applied only when 75 p
cent of the material comes from a moss. I would say that p
regulations would in no way affect the producers of peat humus

Mrs. Poppel: The last gentleman is slightly in error. The F
Trade Practice rules indicate that any peat may be labeled p
moss. However, when it is more than 75 percent sphagnum, or m
than 75 percent seg, it is called "Peat Moss Seg." If we must
regulated, we want to assist in the formulation of the regulatio
We are packing in bags, 25 pounds or 50 pounds—or the equival
in cubic measurement.

Mr. Rafael, Mr. Goode, and Mr. McBride commented further that the hod of sale of peat moss seemed to be a very intricate and controversial ject, and that, while they were in favor of tentative approval of the com- ee recommendation, they were convinced that considerable additional study consultation must be given to the subject.)

Whereupon the Conference tentatively adopted the committee recommen- on.)

. *Permalite or any Material or Substance of the Nature or Char- r Thereof.*—When sold in package form shall bear a plain and spicuous declaration of quantity in terms of minimum net con- s expressed in terms of cubic feet and/or fractions thereof. Pro- d, however, that a maximum of 15 percent over measure shall llowed at time of packing to compensate for volumetric shrinkage sed by compression due to handling, stacking or other cause; and vided, further, that an auxiliary declaration of contents shall be wed, in terms of net weight. When dual quantity markings are ployed, neither shall be greater than the other in prominence or e a more conspicuous position on the package.

OTE.—There are differences of opinion on how this commodity should be sold. consideration was given to the method of sale and marking by net weight. character of the product is such that it has both loss and regain factors. ght variables are, therefore, considerable and inconsistent. The hygroscopic ire of this product appears to be more pronounced than in other substances this characteristic and in which the weight method is prescribed. It is, efore, the opinion of this Committee, based on studies that have been made, the method of sale and representation by cubic feet should be invoked and ow so recommend. Further in this connection, your Committee is informed there are companies now marketing Permalite under the method prescribed is recommendation.

. *Tomatoes in Package Form.*—When packed in containers or ys wrapped in cellophane or with transparent or "window-face" s shall be marked in a plain and conspicuous manner in terms of imum weight of contents, together with the name and location of packer, repacker or distributor; provided, that a supplemental rking in terms of numerical count shall be permitted contingent on all quantity declarations being of equal prominence as to size l position on the package.

OTE.—This is an instance where an industry has taken undue advantage of ral official interpretations of net weight container laws and especially in tion to numerical count declarations. As a consequence, numerical count arations on packages are now of little if any worth as a gage of value to consumer. What can be termed random packing by count with tomatoes of iable sizes and numerical declaration thereof, certainly is adverse under sting circumstances to the principles and purpose of net weight container utes and definitely does not entitle those invoking them to any concessions ereby the consumer is left unprotected. The justification of now imposing pecific weight marking requirement on repackers of tomatoes is conclusively nd in the Federal Food and Drug regulations under Section 403 (f) (3) ch provides that: "Unless an unqualified statement of numerical count gives urate information as to the quantity of food in the package, it shall be plemented by such statement of weight, measure, or size of the individual ts of the food as will give such information." What was originally a package omatoes weighing one pound has gradually been reduced by the introduction of tainers and trays that deliver to the consumer as little as 10 or 11 ounces, yet h the same number of units making up their contents. Your Committee has lored the prevailing situation from all angles, and while it has other rami- tions than those cited, we believe that what we have here presented by way easons, constitutes a strong brief for the adoption of the recommendation we offer.

Following the presentation of this item by the Committee Chairman, con- erable discussion ensued, including the following.)

Mr. Mahoney: I think this is more a marketing problem tha weights and measures problem. As has already been stated, the s of these cartons started off on a weight basis. It was found to be practical, and now you are proposing that we go back to that meth

Mr. Kennedy: When these cartons were sold by weight in the I trict of Columbia, we had a lot of trouble with them. I am sure t you gentlemen will find it so in your jurisdictions when you requ a weight on the commodity. I do not believe that you are permit to require "minimum weight." If your laws are like those in District of Columbia, they require that tomatoes and other commodi be sold by "net weight." That does not mean "minimum weigl

I have talked with store owners and operators who are registe here. They are 100 percent opposed to this proposal. Pack tomatoes by weight requires additional handling of the product, a additional handling causes spoilage.

Mr. McBride: In relation to the lack of authority to say that statement in terms of count be otherwise supplemented, the Fede Code permits just that. I think we should bear in mind that, whe weight is given, the consumer has an opportunity to exer selectivity.

Mr. Goode: We have already discussed the proposed Model Re lation for package marking requirements. Under Section (e) (3) says, "Unless an unqualified statement of numerical count gives curate information as to the quantity of commodity in the package shall be supplemented by such statement of weight, measure, or s of the individual units of the commodity as will give such infor tion." Section (d) (2) of this Model Regulation states that " statement shall be expressed in the terms of weight, measure, num cal count, or a combination of numerical count and weight, or measu which are generally used by consumers and users to express quant of such commodity and which give accurate information as to quantity thereof." I believe it has been the general practice to sell a buy tomatoes by weight.

We have had correspondence with W. A. Queen of the Federal F and Drug Administration, who was very agreeable to this method sale.

(After additional comment by Messrs. Mullen, Lirio, and Chairman True, question was taken, and the Committee proposal was carried by a vote of ayes as against 24 noes.)

6. *Prepackaged Meats at Retail.*—When sold or offered for sale self-service markets should be marked with the net weight of conte the basic price per pound and the total cost of the package.

Note.—This recommendation speaks for itself. It is designed to prom uniformity in enforcement operations which are now variable as relating to t subject. Those who have adopted this method of sale for meats have done for their own interest and convenience. They should, therefore, assume responsibility for the condition of packages as to weight and pricing so that consumer will have the means of gaging values the same as when making p chases directly at the butcher block or counter.

(The Committee's tentative recommendation included the following stipu tion: "To provide assurance of weight accuracy, all such packages should reweighed by the merchant, manager, or employees within a lapsed time not exceed 24 hours." After considerable discussion by the delegates, the Commit Chairman accepted the recommendation that this sentence be deleted from report, and the report was so amended.)

Mr. Kennedy: It may be all right to say in accordance with the that the package should be marked with the net weight of content. , the price per pound, under no law that I know of, has to be in- ated on the package.

Mr. Howard: The buyer has no comparative method of determin- values unless the price per pound is shown.

Mr. Kennedy: I do not think the weights and measures officials demand that the unit price per pound be shown on the package.

Mr. Saxton: We have had four court cases on this matter. It can done legally. We have this requirement in our city, by ordinance. s up for consideration now by the State of Michigan.

Mr. Slough: This proposed price requirement is the law in the y of Akron, and also in the City of Columbus, Ohio.

Mr. Rogers: Under the net-weight container law, the weight must pear. You see the basic need for pricing, in connection with your packaged commodities. You have to establish a basic price to find whether you are getting proper value for your total cost. I want explain that we have used the word "should," and not "shall," in s recommendation.

Mr. Carpenter: Gentlemen, 2 years ago I attended this Conference d addressed you on the subject of prepackaged meats. At that e I dwelt on many of our problems as a retailer endeavoring to ure proper weight determination at the time of sale.

The original Committee suggestion, that every package be reweighed ry 24 hours, is a necessity on certain items. However, that neces- does not extend throughout all of the items that are handled the self-service basis in a package meat store.

Poultry, according to our standard, and the standard issued to our rket personnel, must be checked, not for weight alone, but also for dition, every 24 hours. This is the case with variety meats, such liver, etc. We give items such as sliced luncheon meats three ys shelf life before they have to be checked for weight and condition. would be difficult to set a specific time requirement such as 24 hours cover the entire meat line. Sliced bacon, for example, you might as long as 10 to 12 days without a sufficient amount of shrinkage urring to jeopardize the weight factor.

(The Committee recommendation, as amended, was unanimously adopted.)

7. *Fractional Terms of Ounces.*—When used in connection with antity declarations on commodities in package form, shall be in ments of the ounce divisible by the number two or a power of the mber two.

Note.—The purpose of this recommendation is to prohibit the use of odd frac- ns, such as thirds and fifths of the ounce in package markings. There have n recent attempts on the part of packers of certain commodities to use terms ich are not in coordination with the standards of weight and measurement mally employed in commercial pursuits and by weights and measures officers. ur Committee believes that the use of odd fractional terms creates confu- n; that they would make quantity determinations difficult in enforcement rations through the necessity for conversions; that there is no need in kaging enterprises for refining fractions to elements not representative of sting standards; and that no benefits would accrue to the consumer.

8. *Quantity Declaration on Commodities in Package Form.*—Shall clude the word "net" in their marking terms relating to the contents such packages by weight or volume.

NOTE.—By this recommendation it is hoped to settle the mooted question has come up from time to time as to whether the word "net" should be requ in quantity declarations. There have been rulings permitting the deletio the specific word "net" regardless of the fact that laws requiring quan declarations on commodities in package form generally stipulate that the contents shall be declared. These permissives have been given under the in pretation that a quantity marking of any kind implies and is intended to n net contents and that the word "net" is not needed and, therefore, is discretio as to its use.

There have been court decisions and legal opinions that have reversed s interpretation, on the premise that if the word "net" is omitted from the desc tion of the quantity of a commodity enclosed in a container, confusion can a in the mind of the buyer as to the actual weight or volume in the package, give rise to possibilities for fraud. It has been further pointed out in s decisions and opinions that the statute directs in no uncertain terms that *net* quantity of the contents is to be marked on the outside of the package, it follows that to mark the package as to the quantity of the commodity tained therein, without including the word "net" would amount to a failur comply with the mandatory direction of the statute.

This Committee, therefore, offers this recommendation for adoption to es lish uniform procedures among the packing interests and weights and meas officers in relation to the terms employed in quantity markings.

(At this point the remainder of the Report of the Conference Committee Methods of Sale of Commodities was deferred until a subsequent session of Conference. Continuation of the Report will be found on page 72.)

## TRAINING SCHOOLS FOR WEIGHTS AND MEASURES OFFICIALS A SERVICEMEN

BY W. M. HOXIE, *Service Manager, Bennett Pump Division, John Wood Compa Muskegon, Michigan*

(Mr. Hoxie described the organization of a State-wide training school gasoline pump mechanics and weights and measures inspectors. This sch was sponsored by C. D. Baucom, Superintendent, Weights and Measures Divis State Department of Agriculture, Raleigh, North Carolina, and the Instit of Government of the University of North Carolina, and was held on the cam of the University in Chapel Hill. The various pump manufacturers participa in the 2-day affair, at which were registered over 450 persons. Mr. Hoxie pressed the appreciation and approval of the manufacturers for such an un taking by a State.)

## REPORT OF THE NATIONAL CONFERENCE COMMITTEE ON NOMI TIONS, PRESENTED BY J. E. BRENTON, CHAIRMAN, AND ELECTI OF OFFICERS

The Committee submitted the following nominations for office in National Conference to serve during the ensuing year, or until su time as their successors are elected.

### OFFICERS

*For President:* A. V. ASTIN, Director, National Bureau of Standards.
*For Vice Presidents:* ERLING HANSEN, of Minnesota; R. D. THOMPSON, of Virgin J. F. TRUE, of Kansas; F. M. GREENE, of Connecticut; I. M. LEVY, of Chica Ill.; D. G. NELSON, of Morris County, N. J.
*For Secretary:* W. S. BUSSEY, National Bureau of Standards.
*For Treasurer:* G. F. AUSTIN, JR., of Detroit, Mich.

### EXECUTIVE COMMITTEE

*For members of the Executive Committee:* R. E. MEEK, of Indiana; J. A. PI ERT, of Sheboygan, Wis.; J. M. O'NEIL, of Cambridge, Mass.; C. H. STENI of South Carolina; M. G. RICE, of New York; H. E. CRAWFORD, of Jacksonvi Fla.; E. C. WESTWOOD, of Salt Lake City, Utah; J. A. BOYLE, of Maine; J. MAHONEY, of Maryland; R. W. SEARLES, of Medina County, Ohio; C. FULLER, of Los Angeles County, Calif.; A. C. SAMENFINK, of Rochester, N. W. H. ISING, of Louisville, Ky.; J. M. BOUCHER, of Washington, D. C.; R. DAGGETT, North Girard, Erie County, Pa.

Respectfully submitted.

(Signed) J. E. Brenton, *Chairman*,
C. A. Baker,
J. F. Blickley,
J. Roy Jones,
J. J. Levitt,
C. C. Morgan,
R. J. Zierten,
*Committee on Nominations.*

The report of the Committee on Nominations was adopted and the officers elected unanimously.)

## BELT CONVEYOR SCALES

By R. O. Bradley, *Toledo Scale Co., Toledo, Ohio*

t the 36th National Conference on Weights and Measures, Leonard guire presented a paper to contribute the knowledge and experience he Fairbanks Morse Co. relative to belt conveying scales. In that he pointed out several basic reasons why belt conveyor scales offer endous problems in regard to accuracy. Mr. Maguire's points e well made and quite understandable. In the discussion follow- his talk, he made the following statement—"It is a processing e. Some day it may develop into a commercial scale and in some s there are conditions that are such that it could almost be classi- as a commercial scale. But generally speaking, it is strictly a essing or industrial machine."

uring the period of the last 15 years our company has had ex- ence with integrating belt conveyor scales. As a result of this erience, we have in the last 2 or 3 years incorporated two new ures which we claim have changed the status of belt conveyor es from the processing class to the commercial class.

t a meeting in February of this year, I explained those features Mr. Maguire to see if he, as a representative of his company, would ee that there was probably some basis for our claim. He agreed t there was probably some basis, but that naturally it would be essary for their engineers to incorporate the features in one of their es, in order to secure test data and evaluate the improvements.

he first feature to be explained is very simple. It consists in feed- the speed of the carrying strand of the belt into the integrating ice, rather than the speed of the return strand. We have proven actual belt-speed measurements that the carrying strand on a long oing conveyor may travel as much as 1 percent faster than the re- n strand with zero belt load, while traveling 5 to 6 percent faster n the return strand when a belt load of 100 percent capacity is ng carried. Essentially, the integrating device on a belt conveying le multiplies belt speed by belt load in pounds per unit of length. he belt speed that is fed into the integrating device is not the same he speed of the belt passing over the weighing section, the belt- ed factor, and thus the product of speed and weight, are naturally rror. The result of this error is always a slow reading from the egrating device because the return strand always travels slower n the carrying strand (provided the motor is driving the conveyor d pulley and not the tail pulley). An integrating device using the ed of the return strand can then be accurate only at the load at ich it is tested and found accurate, as a change in load changes the ation between the belt speed fed to the integrator and the speed of belt passing over the scale. When the speed of the carrying strand

(at a point adjacent to the scale) is fed into the integrator, the scribed error is eliminated.

The second feature is as simple in fact as the first but result higher manufacturing cost. It involves the addition of a de that will automatically keep the belt carrying idlers on the scal exactly the same plane with the belt carrying idlers adjacent to scale. When the belt lies across the scale and a leveling devic not used, an error of 10 to 30 percent, depending on belt stiffnes relation to total load, must be balanced into the scale. If the was a good temperature compensated spring, belt tension would the only remaining variable force factor on the scale. However, belt is a very poor spring, and belt-tension effects must also be el inated. Addition of the leveling device allows balancing of the s with or without the belt lying across the scale belt idlers with ide cal results. Thus the effects of belt spring and belt tension are, all practical purposes, eliminated by addition of a leveling device

We have found that incorporation of the two features explai enables us to build belt conveyor scales that will give a weigh accuracy for a given load that is just as accurate or even more ac rate than other approved methods of weighing the same loads.

For the reasons outlined, I believe that integrating belt conve scales are adequate for commercial use. Further, I respectfully s gest that complete regulations regarding allowable tolerances, m imum runs, and standard tests be written in order that local weig and measures officials have some basis for approval of integrating conveyor scales.

Approximately 18 months ago we prepared a set of proposed in grating scale regulations. Only two or three people at this meet have seen that proposal. I know that several items in the propo should be altered but believe it is a starting point for making s usable regulations.

(In answer to questions by Mr. Kerlin, Mr. Bradley explained that a pr test procedure is difficult to arrive at, that the conveyor idlers are kep alinement by the application of sensing devices, and that his term "commer accuracy" related to accuracy required of other commercial scales used in we ing similar loads.)

## TESTING OF VEHICLE TANK METERS

By W. A. Kerlin, *Sealer of Weights and Measures, Alameda County, Califo*

We have divided the problems of testing vehicle tank meters i three component parts, namely, *Design*, *Location*, and *Operation Calibrating Equipment.* Following is a general outline of these th main divisions:

### DESIGN OF PROVER

1. Should meet all requirements of Handbook 45 and ASME-API Meter Code.
2. Size and proportion should be governed by rates of flow a other physical conditions within the jurisdiction.
3. Must drain completely and uniformly.
4. Must not trap air.

Outlet valve must not leak.
Must retain shape and capacity.
Interior should be protected against the elements.
Should be painted with a heat-reflecting color and paint.

### LOCATION OF PROVER

Gravity provers should be in a pit so as to approximate filling ion conditions as to depth and venting.
Prover for power-operated meters can either be elevated or be in t, depending upon local conditions.
Should be protected against direct sun.

### OPERATIONS (MAKING THE TEST, OR THE "HUMAN EQUATION")

Must have well-trained personnel.
Inspection of installation for necessary accessories, air elimi-or, venting, etc.
Prover must be kept wet (tanks of this class are calibrated to iver). In this factor we have two liquid characteristics to con-er; namely, volatility and viscosity.
Draining time must be constant; elapsed time between tests when ng volatile liquids must be reasonably constant. Temperature ct on draining time of the more viscous products such as No. 2 l No. 3 fuel oils must also be taken into consideration.
Testing of gravity meters.
Testing of power meters.
Evaporation.
Temperature change, or expansion and contraction.

t is upon evaporation and temperature change that I base my marks before our general discussion. In corresponding with W. S. ssey concerning this discussion, he stated that many jurisdictions re encountering difficulties with inaccuracies in gravity meters. ntlemen, I doubt very much that the inaccuracies of which he speaks due to the meter itself, but I believe they are due to inaccuracies sing from our own methods of testing and our provers. I say this, as a champion of any meter manufacturer, but as a weights and asures official who has taken the time to isolate the inaccuracies. In connection with this particular problem, we have been doing ne research that indicates that a good many of these variations are e to temperature changes not compensated for, plus the evaporation tor of a volatile testing fluid, such as gasoline. I will give some t data that support these beliefs.

These tests were conducted in a test measure that met all require-nts of the ASME-API Meter Code. In making the tests we used emovable fill pipe that extends to the bottom of the prover tank e fig. 2). This feature is also shown in the latest revision of the SME-API Meter Code. We have made tests both with and without s fill pipe and, as it is realized that most prover tanks do not have s feature, we are not presenting this to suggest that you add it to ur equipment. We do feel quite strongly, however, that the phe-mena should be given consideration in your testing work. Because

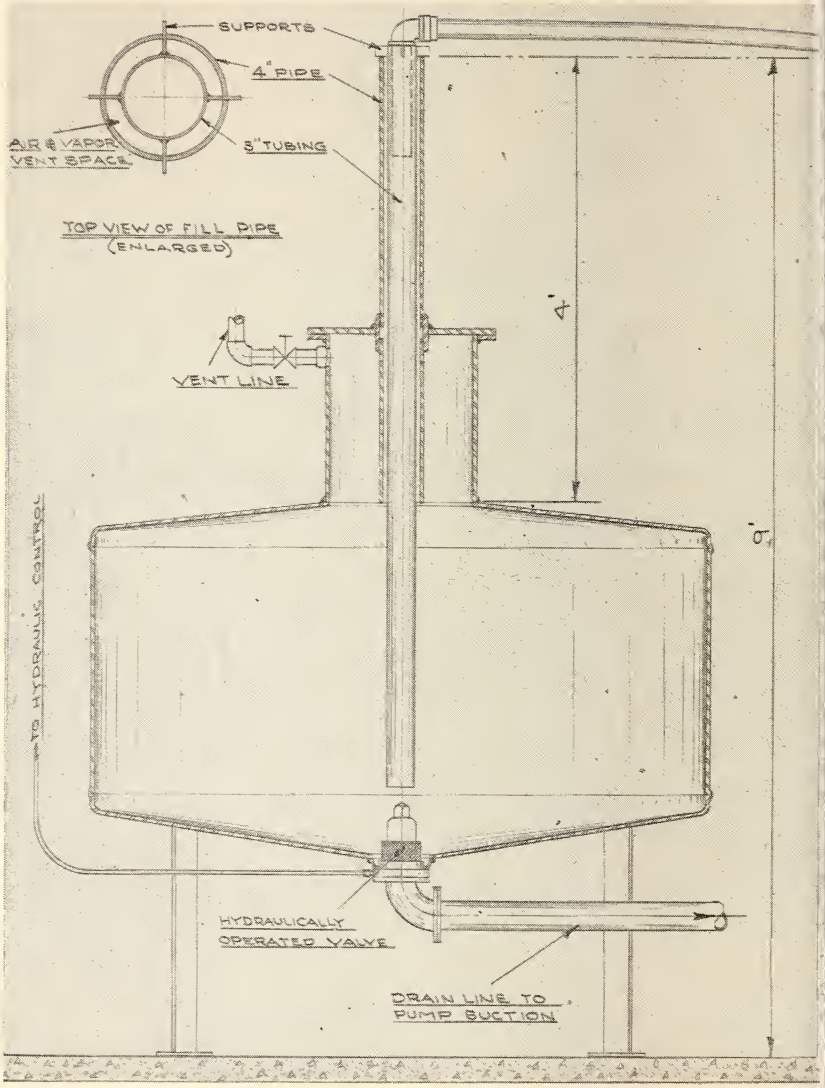



FIGURE 2. *Meter prover for gravity meters.*

st provers do not have this feature, the following tests were made h both types:

TEST 1. (Using removable fill pipe)

| Run | Meter | Size | Type | Rate of flow | Temperature at— | | Prover— | | Test type |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Meter | Prover | Reading | Capacity | |
| | | *in.* | | *gpm* | ° *F.* | ° *F.* | *cu in.* | *gal.* | |
| 1 | A | 2 | Rotary | 60 | 62 | 62 | −2 | 100 | Normal. |
| 2 | A | 2 | do | 60 | 62 | 62 | −2 | 100 | Do. |

TEST 2. (Using open neck of prover and fill pipe removed; otherwise, same conditions existing, and same meter)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 2 | Rotary | 60 | 62 | 62 | −44 | 100 | Normal. |
| 2 | A | 2 | do | 60 | 62 | 62 | −44 | 100 | Do. |

TEST 3. (Using open neck of prover and fill pipe removed; prover cooled by water spray to introduce temperature change; all other conditions equal, and same meter)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 2 | Rotary | 60 | 62 | 60 | −70 | 100 | Normal. |
| 2 | A | 2 | do | 60 | 62 | 60 | −70 | 100 | Do. |

As can readily be seen from an analysis of the three sets of tests ntioned above, there was an evaporation of 42 cu in. on the second of tests. This same evaporation was present on the third set of ts, plus a 28-cu in. variation for temperature differential. Deduct- the 28 cu in. for temperature, we find the results of tests 2 and 3 e the same within 2 cu in.

Of course, there were many, many tests of this type made to estab- h, beyond a doubt, that the data presented herein is correct; not ly were many tests run, but several different makes of meters were ed. In the tests of which I speak, there were actual meter vari- ions, but these did not vary more than 5 cu. in. The actual meter riations were negligible when compared to the variations caused by mperature and evaporation.

I was requested also to give information and data concerning gravity eter tests made from a full compartment and tests made from a mpartment with just slightly more than enough fluid to complete e tests.

These tests are standard procedures in our testing plant and are of e "normal test" type. As you will note from the tests shown below, ere is a slight variation in some cases, probably due to increased ippage at slower speeds:

| Meter | Size | Type | Full head | | Partial head | |
|---|---|---|---|---|---|---|
| | | | Rate of flow | Error | Rate of flow | Error |
| | *in.* | | *gpm* | *cu in.* | *gpm* | *cu in.* |
| A | 2½ | Rotary | 100 | −8 | 85 | −2 |
| A | 2 | do | 92 | −6 | 81 | −6 |
| A | 2 | do | 85 | −10 | 75 | −2 |
| B | 2 | do | 80 | +2 | 70 | +6 |
| B | 2½ | do | 106 | −6 | 96 | +6 |
| B | 2 | do | 95 | +4 | 90 | +4 |

We have found very little variation in tests of this type, and I g them to you only for purposes of discussion.

We now come to power meters and find we have the same t variables, plus one or two more. Let us again return to ideal con tions and note the results.

| Run | Meter | Size | Type | Rate of flow | Temperature at— | | Prover— | | Test type | Moto |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Meter | Prover | Reading | Capacity | | |
| | | *in.* | | *gpm* | ° *F* | ° *F* | *in. u.* | *gal* | | *rpm* |
| 1 | B | 1½ | Rotary | 32 | 64 | 64 | +4 | 50 | Normal | 750 |
| 2 | B | 1½ | do | 32 | 64 | 64 | +4 | 50 | do | 750 |
| Test 2. (Using open neck of prover; no tube; same conditions; otherwise, same meter) | | | | | | | | | | |
| 1 | B | 1½ | Rotary | 32 | 64 | 64 | −50 | 50 | Normal | 750 |
| 2 | B | 1½ | do | 32 | 64 | 64 | −50 | 50 | do | 750 |
| Test 3. (Motor speed the same and nozzle controlled; ideal conditions, using removable tube) | | | | | | | | | | |
| 1 | B | 1½ | Rotary | 22 | 64 | 64 | −14 | 50 | Slow | 750 |
| Test 4. (Same unit used; ideal conditions; slow speed test using motor control) | | | | | | | | | | |
| 1 | B | 1½ | Rotary | 24 | 64 | 64 | −2 | 50 | Slow | 450 |
| Test 5. (Same operating conditions as test 2) | | | | | | | | | | |
| 1 | B | 1½ | Rotary | 32 | 64 | 64 | −82 | 50 | Normal | 750 |

Test 1. (Using removable fill pipe; test measures are on overhead platform, seven feet above ground)

As can be seen, the evaporation factor is still present but increase probably due to higher nozzle velocity.

We will eliminate the temperature test, for the sake of brevity, f we know the results of that one.

The added variables on power meters depend upon whether t speed is controlled by nozzle or by motor. Let us look at a "slow tes taken on the same unit as tests 1 and 2.

From the illustrations given we can see that the motor-controll test gives the more accurate result. Although neither test 3 nor 4 out of tolerance in this case, we have found aggravated conditio existing on many vehicles, and it is a variable that must be taken in consideration.

One more test, in which I am sure you will be interested, is the testi of a power meter using a prover located below ground level. F test 5 we used the same unit.

For test 2, using the overhead 50-gal. measure, the error was min 50 cu in. In the pit test measure of 50 gal., the error should be t same. This, however, is not true. With a vaporization error prese the length of drop of the liquid is also a factor; therefore, we have compound error produced.

It is my understanding that considerable difficulty has been expe enced on power meters with or without predetermined shut-off valv

e difficulty seems to be a "creep" in the meter due to the difference tween the "operating" pressure and the "relaxed" pressure. This ep may be caused by "hose stretch." In fact, extreme caution must used in the testing of power meters to insure that tests are started d stopped with the same hose condition. That is, if the test is begun th a pressurized hose, it must be terminated with a pressurized hose. less this procedure is followed there will be a slight error, depend- upon the type and size of hose used. A spring-loaded back- essure valve in the line at the entrance to the hose reel will minimize s condition to a great extent. This valve does double-duty because reduces hose stretch and also helps the air eliminator at the tailing-off int.

Creep should not be present in equipment with predetermined shut- valves unless the valve is leaking. There are other phenomena esent, however, with this type of device.

Many of you will remember the heated arguments on the floor of e 34th National Conference to reduce, or cut, the tolerances on olesale liquid-measuring devices as recommended by the Committee Specifications and Tolerances. While I do not wish to take issue th the action of the Conference at that time, I do wish to point out at actually the Acceptance Tolerance was increased on "Special sts" and decreased by only 12½ cu in. on a 100-gal. normal test.

My point in bringing this to your attention is not to campaign for other reduction in tolerance but to point out that a temperature ange in gasoline of only 1° F. from the truck compartment to the over will result in an expansion or contraction of a sufficient amount nullify this reduction in tolerance. In order to even record this duction in tolerance, the "calibration plant" or "prover" must be eated as a laboratory by weights and measures officials and not just test can.

The test results noted indicate that, before any further reduction tolerances can be seriously considered, we must take into considera- on the two variables, evaporation and temperature change.

(After the presentation of his paper, Mr. Kerlin answered questions from the or. These questions dealt with items brought out in the paper, and Mr. rlin elaborated on such items.)

(The Conference was adjourned, to reconvene on Friday, May 23, 1952, at 30 a. m.)

## XTH SESSION—MORNING OF FRIDAY, MAY 23, 1952

(J. F. True, Vice President, and A. V. Astin, President, presiding)

### DR. A. V. ASTIN PRESENTED

(Dr. A. V. Astin, Director of the National Bureau of Standards, and newly ected President of the National Conference on Weights and Measures, was esented to the Conference by the Chairman. Dr. Astin made the following marks and committee appointments. He continued to preside as chairman til the completion of the report of the Committee on Methods of Sale of ommodities).

Dr. Astin. I appreciate very much this honor you have conferred on me, and I hope that I will be able to put in a fair amount of time problems of interest to the Conference during the coming year.

I know that, with Mr. Bussey available to work with, things will get one, and you can be assured that he will be given my full support in ything he wants to do in connection with the affairs of this onference.

## APPOINTMENT OF STANDING COMMITTEES

It is appropriate at this time for me to announce appointme to the several Standing Committees of the Conference.

### COMMITTEE ON SPECIFICATIONS AND TOLERANCES

I appoint Rollin E. Meek, State of Indiana, to a five-year te to succeed Nalls Berryman, State of Florida, whose term is expiri

### COMMITTEE ON METHODS OF SALE OF COMMODITIES

I appoint George H. Leithauser, City of Baltimore, Maryland, a five-year term to succeed Russell Ackerman, City of Minneapo Minnesota, whose term is expiring; and Irvine M. Levy, City of Cl cago, Illinois, for one year to complete the term of Llewellyn R. Rop City of Seattle, Washington, who has resigned because of a change positions with the City of Seattle.

### COMMITTEE ON LEGISLATION

I appoint Miles A. Nelson, State of Michigan, to a five-year te to succeed C. H. Oakley, formerly of the State of Wyoming, now employee of the National Bureau of Standards, whose term is e piring; and Donald M. Turnbull, City of Seattle, Washington, f three years to complete the term of Rollin E. Meek, State of India who has resigned to accept appointment on another Conferen Committee.

### COMMITTEE ON EDUCATION

I appoint Joseph F. Blickley, State of Pennsylvania, to a five-ye term to succeed Robert K. Slough, City of Akron, Ohio, whose term expiring.

### COMMITTEE ON TRADING BY WEIGHT

I appoint A. J. Mayer, State of Louisiana, to a five-year term succeed Erling Hansen, State of Minnesota, whose term is expiri

### CONFERENCE CHAPLAIN

To serve as Conference Chaplain for the 38th National Conferen I reappoint R. W. Searles of Medina County, Ohio.

## REPORT OF COMMITTEE ON METHODS OF SALE OF COMMODITI PRESENTED BY JOSEPH G. ROGERS, CHAIRMAN

(Continued from page 64.)

We will now call on Mr. Rogers, of New Jersey, to continue the rep of the Committee on Methods of Sale of Commodities.

MR. ROGERS: The items left over from yesterday are 9, 10, and 11 the Report of the Committee.

9. *Preheated Fuel Oils.*—This item was referred to your Committ by vote of the 36th National Conference for recommendation as proper method of sale for such oils. While the Committee has devot some study to the question it has not, up to the time of preparing t report, reached definite conclusions to submit to the Conference, a indulgence is, therefore, asked for continuation of our research on t subject.

10. *Homogenized Concentrated Milk.*—Action was deferred on t Committee's recommendation covering this subject which appeared

m No. 2 in our report to the last annual Conference and was referred k to Committee for further study.

No further conclusions have been reached than those originally pre- ted. The dairy interests contemplating the production of such milk m to have lost interest and there appears to have been no intensity in ceeding with further developments. Under the circumstances this mmittee feels that further consideration of this item can be pended pending the necessity for definite action.

11. *Meats and Poultry in Plastic Wrappings and Casings.*—For the rpose of clarification this Committee reopens this topic which ap- ared as item 3 in our report to the 36th National Conference. The commendation it contained was adopted at that time. It reads as llows:

> *Meats and Poultry in Plastic Wrappings and Casings.*—Shall be exempt rom net quantity declarations at packing sources and shall be sold on the asis of actual net weight at time of sale; provided that each item of meat r poultry so wrapped or contained shall be plainly and conspicuously marked vith the legend: "To Be Weighed At Time of Sale", and, where the weight of he wrapping or casing exceeds ⅛ ounce, the tare weight shall be plainly nd conspicuously marked for deduction to determine the net weight.

The Southern Weights and Measures Association through an action its Committee on Methods of Sale of Commodities subsequently filed objection emanating from their Conference session at Richmond, rginia, on November 7th, 1951. It was referred in report form, in- rporating other items, to our Committee through the Office of eights and Measures of the National Bureau of Standards. We ote from the said report:

> 3. *Meat, Poultry, Fish and Cheese in Plastic Wrappings and Casings.*— This Committee feels that commodities of variable weights in package form and those commodities that because of their method of processing prior to sale do not lend themselves to consistent quantity declarations when in package form should be sold from bulk and should not be exempt from the requirement of net weight markings on individual consumer packages. This legend—"To be weighed at time of sale," is contrary to the Model Law which requires that all commodities in package form be labeled as to weight, measure or numerical count. Experience and tests have shown that some packages of fish and cheese, even though marked with the legend, "To be weighed at time of sale," are not being weighed by some merchants when a retail sale of these commodities is made.

Therefore, your Committee is of the opinion that this recommenda- on is inconsistent with the Model Law and should be referred or nended so as to be consistent.

The Committee of the Southern Weights and Measures Association ppears to have amplified the items under this heading in their report d have added fish and cheese which the adopted recommendation d not include.

Dealing with the points of contention in their order as raised in the emurrer of the Southern Weights and Measures Association, we ould first mention that our reasons behind the recommendation were lly given when it was offered to the last Conference for considera- on. Those reasons we consider to be as logical and sound now as ey were when the Conference in its wisdom saw fit to adopt what we roposed.

The Committee of the Southern Association now proposes that those mmodities which because of their method of processing prior to sale o not lend themselves to consistent quantity declarations when in ackage form should be sold from bulk and should not be exempt from

the requirement of net weight markings on individual consumer pa
ages. The catch in this is the proposed sale from bulk. This wo
presuppose that we would require the packing enterprises putting
the types of commodities involved in this controversy, to change th
methods of production and revert to packaging in barrels, tubs, p
and crocks as employed in the era before the age in which we are n
living, and when sale from bulk was the rule and not the excepti
It is not difficult to visualize the reaction that would set in were
now to attempt such restriction. Whether we like it or not, we m
realize that the individual consumer package is here to stay, as we
aware that production methods along this line are increasing and
decreasing.

The Bureau of Animal Industry of the Federal Government l
already taken cognizance of methods now inherent in packaging
sential foods and has ruled that meats in casings are exempt fr
marking requirements. In this they probably were influenced by t
same reasons as those upon which the adoption of our recommendat
was based. Our action is, therefore, not without precedent. In de
ing with the matter of exemptions, however, we incorporated a p
tective factor by the stipulation that packages entitled to quant
marking concessions should bear the legend "To Be Weighed At Ti
of Sale" to place merchants under notice as to their obligation
vending such packages. As to the effect of such legend and the
servation offered that packages so marked "are not being weigh
by some merchants when a retail sale of these commodities is mad
the enforcement of the instructions contained in the legend natura
becomes the obligation of local supervision at retail outlets. Its
fectiveness would, of course, not be self-sufficient without this.

On the question of the recommendation being contrary to the Mod
Law requiring packaged commodities to be labeled as to weight, me
ure or numerical count, we agree that it is a departure not only fr
this but from existing laws in State jurisdictions, but we must at t
same time consider that these statutes were placed on the books lo
before the packaging situation has become what it is today, with all
technical and troublesome ramifications and problems. With the d
velopment of this situation it was natural that ideas for new metho
and processes would be conceived and born. They are looked up
in the light of progress. The challenges they offer call for readju
ments of regulatory affairs if we are not to obstruct such progr
which represents America at work.

Your Committee is further cognizant that the contents of its reco
mendation represents new thought in relation to marking regulatio
under net weight container laws. However, it is a thought influenc
and necessitated by evolutionary trends in the packing industry, whi
appear to justify a modification of marking requirements in certa
circumstances as relating to the commodities entailed in this issue.

The sole purpose of our recommendation on this issue is to establi
a means by which the consumer will pay for only what he gets. At t
same time it sets up a procedure with which all engaged in packi
and trade pursuits can readily conform without detriment to consum
welfare. The consumer in fact benefits by the principles of this r
commendation as it has the effect of bringing the packaged produ
back to the days when purchases were weighed at the butcher blo
or store counter and the buyer was not saddled with shrinkage lo

ich, we believe all agree, is the most objectionable feature in rela-
n to packaging.
As the result of our review and reconsideration of all factors in-
ved in this issue, your Committee is of the opinion that the recom-
ndation as adopted by the 36th National Conference should stand
originally constituted without amendment, and we so recommend.
Mr. Kennedy: I feel that this recommendation is entirely too broad.
now have chickens in plastic bags. I presume you call them
stic wrappers. They are susceptible of being marked with the
ght. I can see no reason to eliminate such items from a prepacked
nter. We must seek, and we must have, the cooperation of the
rchants. They want to cooperate. But you are throwing obstacles
their way whereby they cannot cooperate. I think the recom-
ndation of last year should be reviewed and rewritten.
Mr. Rogers: This will have no effect on the prepacking situation.
e man that uses those methods must price, mark, and weigh his
kages. This exemption is at the processing source. It is to cover
ns especially subject to shrinkage. The merchant sometimes finds
nself in trouble. He buys in good faith and sees that the package
properly marked. That marking is not good because there has
n shrinkage during the marketing process.
Mr. Kennedy: Are you opposed to the inclusion of fish and cheese,
included in the Southern Association recommendation?
Mr. Rogers: We were trying to cover two items only. We thought
m most essential. We want to pursue it further. There are a
mber of items of cheese that should be under the same recommenda-
n. There are types of cheese today which are put up in tin contain-
with holes. This cheese is in package form. You put a marking
it today, and in several hours that marking is no longer correct.
ey must weigh it when it is sold. Many commodities are handled in
same manner.
Mr. Kennedy: You did not include cheese.
Mr. Rogers: No, we did not. We were trying to comprehend the
ms sold in the package in which they are processed.
Mr. Kennedy: There are some fish that are processed at the point of
gin.
Mr. Rogers: The packers are willing to mark packages of fish, but
marking is not valid because of shrinkage.
Mr. Kennedy: The Southern Association recommended fish and
ese. If you are going along with them, why not include fish and
ese?
Mr. Rogers: We are certainly not objecting at all to the inclusion
those items, if you gentlemen want to do it.
Mr. Kennedy: There is no recommendation to that effect.
Mr. Hart: I am Secretary of the Gloucester Fisheries Association,
oucester, Massachusetts. We are a substantial fishing port,
,000,000 pounds a year. Of that total, 90 percent of the fish is
eted and frozen. Within the past 4 to 5 years we have developed
so-called 1-pound pack. Probably from 20 to 25 percent of our
al pack now is in 1-pound packages. The bulk of our fish is put up
what we call 5- and 10-pound cartons. They contain in the case of
5-pound cartons five packages of fish. They will take a 5-pound
, fill it with fillets, and allow a tolerance possibly of 2½ or 3 ounces.
e packages are wrapped. The weight is indicated on the outside
the carton.

The same principle applies on the 10-pound pack. We han something like 65,000,000 pounds of fillets a year. It would be ph cally impossible to weigh your cellophane wrapped fillets at the ti of packing. We are using inserts in the carton. The insert rea "Reweigh at time of sale."

Mr. McBride: I wish to offer an amendment to the original moti I believe this is consistent with Mr. Kennedy's remarks, and I m that the subjects "fish and cheese" be included with the commodi that the committee has enumerated.

Chairman Astin: Mr. Rogers indicates that he will accept t amendment.

(The motion was seconded and adopted by the Conference.)

Item 11, as amended and adopted by the Conference reads as follows:

*Meats, Poultry, Fish, and Cheese in Plastic Wrappings and Casings.*— Shall be exempt from net quantity declarations at packing sources an shall be sold on the basis of actual net weight at time of sale, provided tha each item of meat or poultry so wrapped or contained shall be plainly an conspicuously marked with the legend: "To Be Weighed at Time of Sale and, where the weight of the wrapping or casing exceeds ⅛ ounce, the tar weight shall be plainly and conspicuously marked for deduction to determi the net weight.

(The report of the Committee on Methods of Sale of Commodities was ado as amended.)

## REPORT OF THE COMMITTEE ON SPECIFICATIONS AND TOLERANC PRESENTED BY J. P. McBRIDE, CHAIRMAN

The tentative report of the Committee has been in the hands Conference members, and representatives of industry, for some ti

It was stated in this report that the committee would be glad receive suggestions and to afford opportunity of hearing on the m ters treated in the report. Sunday was devoted to hearing interes parties, and, as a result of these hearings, your committee is offer for your consideration the final report. I shall present for y consideration and action, the tentative report of the committee amended by the final report.

Your Committee has had two interim meetings with the ice cre and carton manufacturing industries and one with the scale indust Correspondence has been carried on with other affected industr and with Conference members in relation to the various matt This report, therefore, represents Committee conclusions in relat to matters referred to it by the 36th National Conference and to th coming before it from other sources.

### TENTATIVE CODE FOR PRE-PACKAGED-ICE-CREAM MEASURE-CONTAINERS

At the 36th Conference, this code was first submitted and tentativ adopted.

The last sentence of specification S.2.1 Capacity Point reads follows:

. . . A pre-packaged-ice-cream measure-container shall contain its ind cated capacity without apparent distortion from its designed regular shape

The phraseology "without apparent distortion" is conceded to equivocal language and conducive to vacillating procedure wh would result in lack of uniformity.

In this type of measure-container, cognizance must be taken of fact that it is susceptible to distortion, and that such distortion beg when the measure-container is assembled or shaped so as to rece

ice cream. Further distortion occurs in the filling and hardening he product. A measure-container equal to the calculated capacity, efore, presents a factor of excess quantity which becomes a concern he weights and measures official, as it is his duty to protect the dor as well as the consumer. It is obvious, therefore, that to require ntainer to be of dimensions equal to its calculated capacity, though offers an easy method of test, would not be in keeping with the gation of the weights and measures official to preserve the equities ween all parties.

ne answer to the distortion problem might be to require the use oard of sufficient quality and thickness, so as to maintain rigidity. s would involve specifications on quality of material, and it is not purpose of our code to enter this field. It could also be offered t a supporting frame should be employed when the measure-tainer is being filled. Inasmuch as these are single-use containers, economic factors of cost of the container and cost of production r into consideration, as these costs would be reflected to the sumer.

third method might be to allow the use of a container of dimen-s less than the indicated capacity, and anticipate the yield to be as to provide for such indicated capacity. This, too, would not ood weights and measures practice, as there would be a variable, ending on quality and thickness of board, as well as on shape and ign of the carton, and method of fill and handling. It would leave n to the unscrupulous the advantage of controlling the fill with imum distortion, and thus giving short measure.

Your Committee has spent considerable time during the year on its n initiative and in cooperation with the ice cream and carton ustries, as was its promise in the report to the 36th Conference. were seeking to develop a uniform test procedure and a testing dium to meet this problem.

n its final analysis, the question is as to whether a square, rectangu-, or other flat-sided container could be acceptable if its calculated ical content was somewhat less than actual (or indicated) cubical tent, provided the ice cream packed in such container was, in fact, al to or in excess of the indicated capacity.

Numerous experiments were conducted, and various tests were em-yed, to prove the point that the required volume could be accom-shed in a measure-container of these characteristics. This was isfactorily established, but in some instances the methods employed e involved and somewhat complicated. Furthermore, practical fa-ties for some of these tests would not be readily available to weights l measures officials for field tests. All parties were agreed that ter is the most readily available and most satisfactory testing dium.

We finally resolved the question of distortion to be confined to the called normal shape which would result solely from the assembly shaping of the container in form to receive the ice cream. It uld be the obligation of the ice cream manufacturer to fill these tainers in a manner so as to follow the normal design and shape he container as assembled. Moreover, the manufacturer would not apt to fill beyond this conformation, since this would cause a loss product to him.

This method of test would require that the measure-container be ted with support. The problem then was to develop a holding or

supporting device, for containers larger than one quart, which wo be readily available, and into which the assembled empty carton co be placed, so that this normal distortion on all four sides would re the supports and be thus confined when the carton was tested capacity with water.

This method, in the opinion of the Committee, offers the best most practical means of resolving the difference between the so-ca calculated cubical content and the actual volumetric content. T method requires that further distortion shall be controlled by the cream manufacturer—his guide being to follow the intended des and shape of the carton. The method also follows the test proced outlined in National Bureau of Standards Handbook 45 for meas containers.

Your Committee, therefore, recommends that this code be amen as follows:

Amend S.1. by changing the side title "CAPACITIES" to "UNITS".

Amend S.2.1. to read as follows:

S.2.1. CAPACITY POINT.—The capacity of a pre-packaged-ice-cream meas container shall be sharply defined by (a) the top edge, (b) a graduation r the top edge, or (c) the lowest portion of a shoulder, cap seat, lid seat, or in tation near the top edge, of the container. A graduation or indentation s extend at least half-way around the circumference or across two opposite s of the container.

Add a new paragraph S.2.2., as follows:

S.2.2. SHAPE.—A pre-packaged-ice-cream measure-container shall be desig as some regular geometrical shape, and its capacity shall be determined witl distortion from its normal assembled shape.

Add a new section, N. NOTES, to read as follows:

N. NOTES.

N.1. TESTING PROCEDURES FOR WATER TEST.

N.1.1. PREPARATION OF KNOCKED-DOWN CONTAINER.—A knocked-down packaged-ice-cream measure-container shall be properly assembled, tape shal applied to the outside of the bottom of the container, if necessary, to maint its normal assembled shape, and melted wax shall be applied to the inside the container to the extent necessary to make the container water tight. ( treme care should be exercised to avoid applying more wax than necessary order that the capacity of the container may not be significantly reduced.)

N.1.2. PREVENTION OF DISTORTION OF FLAT-SIDED CONTAINER.—A pre-packa ice-cream measure-container having flat sides shall be, if necessary, so restrai before the actual test is begun that its sides will not bulge when it is filled w water. For containers having capacities of 1 liquid quart or less, this can accomplished by applying a metal plate or a piece of heavy cardboard to e side of the container. These pieces shall be only slightly smaller than sides to which they are applied. They can be held securely in place by me of rubber bands, cord, or tape. Larger containers shall be supported by a ri restraining form having a design symmetrical with the container being tes This form shall support against distortion not less than the entire area of central two-thirds of each side panel of the container, measured from botton top. The inside width dimension of any side panel of the restraining f shall be $\frac{1}{16}$ inch greater than the corresponding outside dimension of the c tainer. (The outside width dimension of any side panel of the container sl be established by adding to the inner side center-of-score to center-of-sc dimension two thicknesses of the board used, and the sum thus obtained sl be rounded off to the nearest $\frac{1}{64}$ inch.)

It is the understanding of your Committee that the ice cream a carton industries will proceed immediately, after the final adopt of this code, to establish, if possible, one size and shape for ½ gall flat-sided ice-cream measure-containers.

With the adoption of the above amendments, your Committee ommends the final adoption of the code for pre-packaged-ice-cream sure-containers.

**ested Tentative Test Procedure for Volumetric Measuring of Pre-packaged-Ice-Cream Measure-Containers, see figures 3, 4, 5, and 6**

Carton in flat.

and c. Folding back carton to break all scores. This tends to re up the package and prevent propelling.

. Block of wood or box made about $\frac{1}{32}$ inch short of inside dimen- is of carton.

Place carton over block and lock bottom.

Apply pressure to carton bottom over form so that the full flap lie flush and square. Holding this down tightly apply tape (any zen-food locker tape will do nicely) to the center edges of carton hown in figure 3, f.

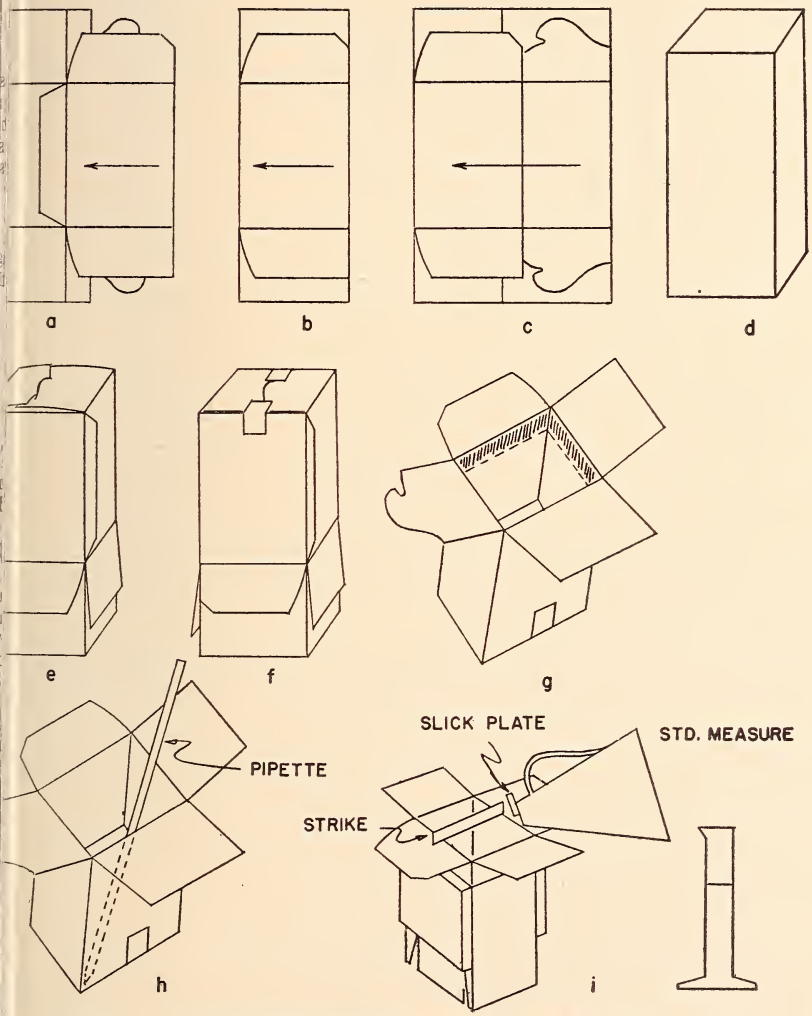



FIGURE 3. *Pre-packaged-ice-cream measure-container* (½ *gallon*).
Preparation for test.

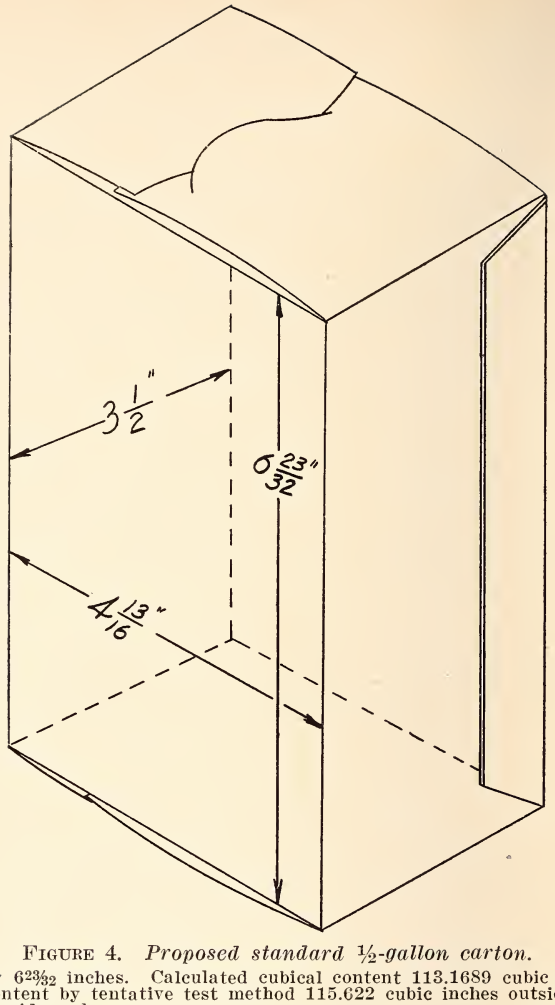



FIGURE 4. *Proposed standard ½-gallon carton.*

$4\frac{13}{16}$ by $3\frac{1}{2}$ by $6\frac{23}{32}$ inches. Calculated cubical content 113.1689 cubic inches. Act volumetric content by tentative test method 115.622 cubic inches outside seal, 115. cubic inches inside seal.

g. A detergent or liquid soap is wiped on the top sides of the cart to break the surface tension of the water used in measuring carton.

h. Using a 1.1-ml pipette (or a pipette graduated so that a kno volume of wax may be measured) deposit all the wax in the corner th hinges the full flap (bottom flap). The carton at this time is held an angle and the carton rotated to let the wax run along the cut edg of the bottom flap and back to the original starting point. Th should give a tight seal to the bottom.

It is recommended that a mixture of 20 percent of amorphous w and 80 percent of regular paraffin be used.

i. The carton is now ready for volumetric measuring, and the on caution suggested is that in releasing the water from the standa measure to the carton, that it should not be done too quickly. If r leased too quickly, the seal is most likely to break. Fill to the strik using additional water from a graduate holding a known volume water. If the water reaches the strike before all water is drain from the standard measure, pour remaining water into graduate.

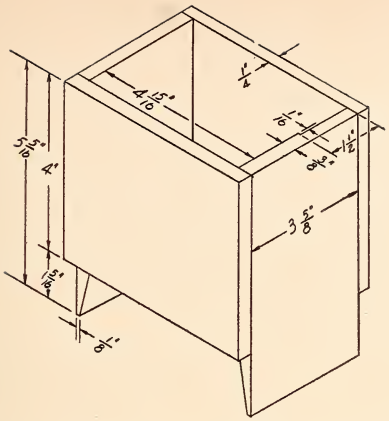


FIGURE 5. *Proposed restraining form for volumetric measure ½ gallon.*

Carton based on center-of-score dimension. Plus 2 stock thickness + 1/16 inch.

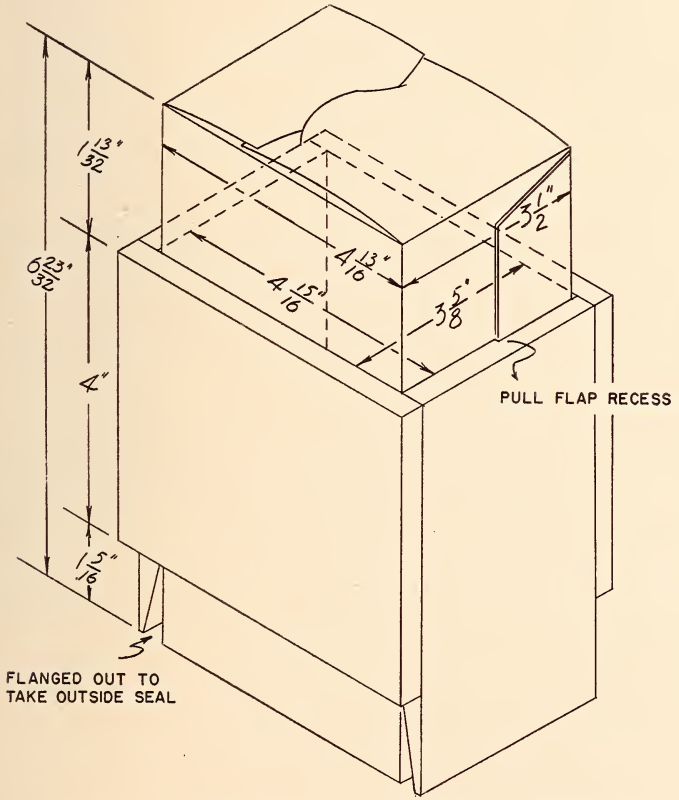



FIGURE 6. *Determination of restraining form dimensions.*

ide dimension of form is based on center-of-score to center-of-score measurement, plus two thickness of stock plus 1/16 inch.

3.5 + .052 + .0625 = 3.6145, or 3 5/8, inches.
4.8125 + .052 + .0625 = 4.927, or 4 15/16, inches.

Amend S.2.2., INDICATING MEANS, to read as follows:

S.2.2. INDICATING MEANS.—This shall be so constructed that the proper met of reading the indications will be readily apparent. The motion of the n sensitive indicating element shall be continuous as material being measu is passed through the device; the motion of other indicating elements may intermittent. If the most sensitive element of the indicating system util an indicator and graduations, the relative movement of these parts corresp ing to a measurement of 1 foot shall be not less than ¼ inch. If separate ments are utilized to tally feet, tens of feet, hundreds of feet, and so on, comp revolutions of each such element shall be accurately and definitely tallied, and such elements shall be accurately synchronized. The indicating elements s be readily returnable to a definite zero indication.

Amend Tolerance Table 1 to read as follows:

TABLE 1.—Maintenance Tolerances for Cordage-Measuring Devices

| Indication of device | Tolerance | |
|---|---|---|
| | On over registration | On under registratio |
| *Feet* | *Inches* | *Inches* |
| 0 to 20, incl | 1 | 2 |
| 21 to 30, incl | 1½ | 3 |
| 31 to 40, incl | 2 | 4 |
| 41 to 50, incl | 2½ | 5 |
| Over 50 | Add 1 inch per indicated 50 feet. | Add 2 inches per indicated 50 feet. |

The reason for the first amendment is that the original wording S.2.2 is more severe than like provisions in other similar codes. Y Committee feels that the relative low cost per unit of the materi measured by these devices does not justify this extreme degree of c trol by weights and measures officials. Furthermore, so far as Committee has been advised, no manufacturer in the United Sta has yet produced a device which will meet the original requiremer Your Committee believes that this proposal is reasonable and prop

The second amendment has been found necessary for the reason t these devices must perform both forward and backward. This cau an extreme amount of backlash in the gears, etc. Therefore, a lar tolerance to take care of the initial error is required. Also, m deliveries through these devices will exceed 20 feet.

With the adoption of the above amendments, your Committee reco mends the final adoption of the code for cordage-measuring devic

During the 36th National Conference on Weights and Measures, was suggested that the Committee on Specifications and Tolerances dy and make recommendations for specifications, tolerances, and ulations covering measuring equipment for liquefied petroleum es. At that time it was indicated that substantial assistance would volunteered and rendered by the various industry organizations olved. Since such assistance was not forthcoming, and since the mmittee has no facilities at its disposal for the necessary research l investigation, your Committee is unable to offer recommendans at this time. Your Committee hopes that further developments testing equipment and procedures for liquefied petroleum gas measng devices will be forthcoming in the near future. The cooperation l assistance of industry is invited.

## COMMENDATIONS OF THE SOUTHERN WEIGHTS AND MEASURES ASSOCIATION

The Southern Weights and Measures Association, at their Novem- 1951, Annual Conference voted to submit to the National nference Committee on Specifications and Tolerances four recomndations, as follows:

*Recommendation 1.*—That the conference again call upon the National Conence to eliminate from the scale tolerances the excess tolerance permitted scales with stabilized load-receiving elements.

*Recommendation 2.*—That this conference recommend to the National Conence that *serious* consideration be given to the development of separate codes tolerances for each of the following: 1, bulk plant and terminal meters; ank truck meters under pressure; and 3, gravity meters.

*Recommendation 3.*—That this conference request the National Conference ive study to revising the tolerances for Retail Liquid Measuring Devices, and t tolerances, as indicated below, be inserted in Table 1, in lieu of the present erances, provided, however, that this amendment shall not apply to pumps ing delivery hoses in excess of 15 feet.

| *gallons* | *cubic inches* |
|---|---|
| 1/2 or less | 2 |
| 1 | 3 |
| 2 | 4 |
| 3 | 5 |
| 4 | 5 |
| 5 | 5 |
| Over 5 | Add 1 cubic inch per indicated gallon. |

*Recommendation 4.*—That this conference request the National Conference eliminate in paragraph R. 5. of the Scale Regulations, the word "retail."

## Recommendation 1

In connection with Recommendation 1, the Southern Associati proposed to the National Conference last year that the special Sh Test tolerances allowed on small-capacity scales, with stabiliz load-receiving elements, as provided in T.1.1.2. be eliminated; the r son for the recommendation being that strict adherence to the T.1. tolerances would lead to inconsistent results. In given situations scale with a zero error on center loading would be condemned if t shift-test error on the scale in question exceeded the special toleran even though the error was less than the basic tolerance on the sc under test.

This matter was considered by your Committee last year. Howev in the absence of adequate evidence as to the extent of this conditi and of the industry picture in relation thereto, this matter was l for further study by the Committee. A report was to be made this Conference.

A comprehensive study has been made. More than 700 tests w conducted by selected officials in various sections of the country, a by scale manufacturers. The results of these tests, which were c ducted strictly in accord with code requirements, have led us to t conclusion that the special shift-test tolerances for small-capaci scales, with stabilized load-receiving elements, are no longer require

This matter has been discussed with the scale industry. Your Co mittee understands that the present attitude of the industry is symp thetic to this recommendation. The scale industry is vitally concern over the method to be employed in making the shift test. With t adoption of this amendment, weights and measures officials should doubly careful to make their tests in strict accordance with the pr visions of National Bureau of Standards Handbook 44, and as ou lined in National Bureau of Standards Handbook 37. Yo Committee urges all officials to cooperate fully in this respect (s fig. 7).

Your Committee recommends that tolerance T.1.1.2. of the Sc Code be amended to read as follows:

T.1.1.2. To Shift Tests.—Basic tolerances shall be applied.

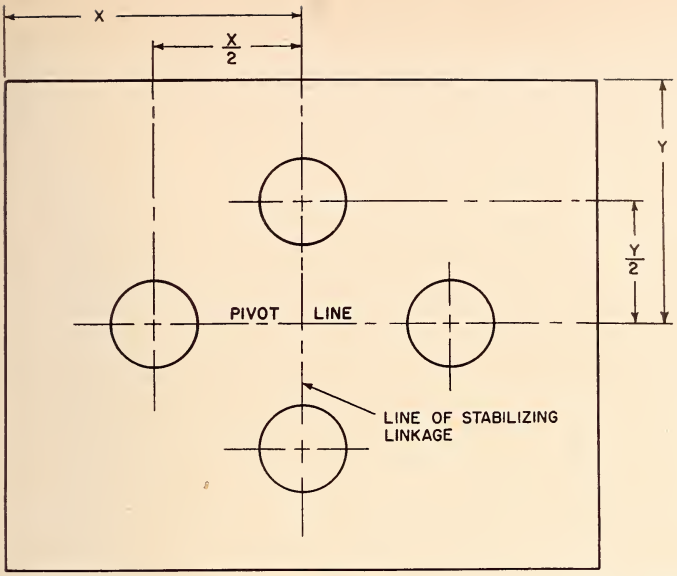
## Recommendation 2

In connection with Recommendation 2, your Committee would poi out that there are now separate codes for bulk plant meters (liqui measuring device code) and vehicle tank meters (vehicle tank cod Furthermore, the same accuracy should be maintained in behalf receivers of products from these several types of meters. We shou avoid, insofar as possible, differentiations because of method or ty of device used. All of these devices handle a common product, a the choice of devices lies with the vendor of the product. In fairne to the receivers of the product, we feel that the present codes a adequate.

Your Committee recommends that no action be taken on this re ommendation.

## Recommendation 3

In regard to Recommendation 3, it was represented that the prese tolerances are not being generally observed, and that tests of the




URE 7. *Test-weight positions for shift test on small-capacity scales with stabilized load-receiving elements.*

listance between center and edge of load-receiving element—parallel to pivot line; distance between center and edge of load-receiving element—parallel to line of stalizing linkage; circles indicate positions of test load equal to one-half capacity of the ale.

ices are usually made with 5-gallon standards; that devices reach- the maximum tolerance of 7 cubic inches on 5 gallons would, on gressive error, be off more than the tolerances allowed on deliveries 10 gallons or more. It has also been pointed out that these rance values have not been amended since 1921.

Presently, this portion of the table particularly affects retail gaso- dispensing units. Correspondence has been had with the various nufacturers of these units, and they have indicated to your Com- tee that their devices can meet the new proposed tolerances.

A hearing was granted by your Committee to the interested parties relation to this proposed change, consisting of representatives of petroleum industry and representatives of the Gasoline Pump nufacturers Association. Objection was offered to this change both phases of industry on the ground that the present tolerance more severe than tolerances in relation to some other types of asuring devices. They further argued that attendant on this type measuring element are certain related mechanical devices which, and of themselves, present certain problems, and that at the mo- nt they have some doubt as to whether further perfection can be ieved in these related elements to accomplish compliance with eduction in the tolerance. The further argument was advanced on part of the petroleum industry that this reduction would entail them considerable expense from the maintenance standpoint. The ggested change is not one of great degree, and there is some ques- n in the minds of your Committee as to the possibility of improve- nt in devices to meet the suggested change, as well as the added rden of maintenance of these devices. In some measure it may

be true that in some juridictions adequate equipment may not present for desirable tests. Your Committee has deliberated to g length and has carefully weighed all the arguments, and we r recommended that this matter be committed to further study dur the ensuing year, the study to be participated in by industry as v as by weights and measures officials.

### Recommendation 4

With reference to Recommendation 4, the Southern Association recommended to the National Conference last year that Scale Regu tion R. 5. be amended by striking out the word "retail". At t time it was the thought of your Committee that, in view of difficulties encountered in attaining compliance with Regulation R which was of recent adoption, this proposed amendment was too p cipitate. It was also the opinion of your Committee that the prim purpose of the aforementioned regulation was consumer protecti No action, therefore, was recommended by your Committee last ye

It now appears that progress has been made in the production of l priced, compensated spring scales for use in the retail field. A some progress has been made in the production of these scales suita for use in the wholesale field. A hearing was held on Sunday w representatives of industry present, and, as a result of the heari your Committee recommends the following amendment:

> Amend Regulation R. 5. of the scale code by deleting the word "retail in the second line thereof. This amendment to become effective Januar 1, 1953.

The effective date of the proposed change was deferred so that ma facturers and users would be allowed time in which to comply w this new requirement.

### Code for Liquid-Measuring Devices

It has been called to the attention of your Committee that there some confusion in the interpretation of the language in Specificati S. 2.6., which reads as follows:

> S. 2.6. Air Elimination.—A meter device shall be equipped with an effe tive mechanical air eliminator or other effective means to prevent passag of air or vapor through the meter.

This situation has precipitated lack of uniformity in methods of t and probable inadequacy of scope of test particularly involving m tiple dispensing units operating from a single source of power. T specification as now written is intended to cover in its requireme each dispensing unit. This same requirement was expressed in N Handbook 22, Specification 5, as follows:

> In a pump discharge unit, a mechanical air eliminator or other mean shall be installed *adjacent to the meter inlet.* [Italics ours.]

and in NBS Handbook 29, Specification 5, the last sentence thereof, follows:

> * * * In a pump discharge unit, a mechanical air eliminator or othe means shall be provided in such a position that it will effectively preven the passage of air or vapor through the meter.

mend S.2.6. on page 61 of the Code for Liquid Measuring Devices ake the last sentence thereof read as follows:

a pressure-type unit, a mechanical air eliminator or other effective means l be provided in such a position that it will effectively prevent the passage r or vapor through the meter.

has been brought to the attention of the Committee that there is e confusion in interpretation of N.1.2. Testing Drafts, both elation to some types of retail devices and wholesale devices. The sent wording at the end of the first sentence reads:

* * * for other types of retail devices used for dispensing motor fuel, sting drafts of at least 5 gallons shall be utilized.

pparently this language has given rise to the thought that no test ess than 5 gallons should be made on a meter type device. This is the thought of the Committee. As you are doubtless aware, the prevalent type of retail device for dispensing motor fuels is the alled meter type. It is not necessary to regularly test this type ice at each indication throughout its designed delivery range. ting drafts of 5 gallons are suggested as convenient units. It is gested that testing drafts of at least this amount shall be employed ny series of tests on a meter type device. This is not intended to clude the testing of these devices at any other point, however.

Ve recommend that paragraph N.1.2. be amended, for the purpose clarification, to read as follows:

.1.2. Testing Drafts.—The full capacity delivery and each intermediate very for which the device is designed shall be tested in the case of retail on-type and visible-type devices; for other types of retail devices used for ensing motor fuel, testing drafts of one or more amounts, including drafts t least 5 gallons, shall be utilized. For wholesale devices, testing drafts uld be equal to at least the amount delivered by the device in 1 minute at its ximum discharge rate, and shall in no case be less than 50 gallons.

The report of the Committee on Specifications and Tolerances was discussed n by item, as it was presented by the Committee chairman. Each amend- t was acted upon individually, and, at the conclusion of the report, the Com- tee's recommendations were adopted as a whole.)

## REMARKS OF MR. ARTHUR SANDERS

Mr. Sanders: I would like to call the attention of the Conference two things concerning the changes which have been made in the 4 scale code. The first relates to the shift test. I want to emphasize t the Specifications and Tolerances Committee asked the National reau of Standards to prepare a chart showing the correct position- of weights in making the shift test on small-capacity scales with bilized load-receiving elements. We believe that the chart which Bureau prepared should be widely distributed and publicized ong all weights and measures inspectors. We hope to do this ong all the sales and service people in the scale industry, so that ryone can be operating according to the same correct procedure. at was really the only objection that the scale industry had to this ange in the scale code, which eliminates this special tolerance e fig. 7).

The other matter that I would like to call to your attention is the hibition against the use in wholesale sales of foodstuff, except its and vegetables, of uncompensated spring scales. We have made extensive survey and have had many discussions with the Specifica-

tions and Tolerances Committee. I think it should be brought to attention of weights and measures departments all over the coun that there are some very good manufacturers of spring scales, hanging type, who do not have an uncompensated spring scale. think all have worked toward the development of such scales, p ticularly the small-capacity scales. It is not such an easy mat You do not just put a compensating spring in the old uncompensa spring scale housing and develop a satisfactory compensated spr scale. I think it should be called to your attention that this progr is not going to be easy, and that some of the manufacturers may be able to develop satisfactory scales by the first of January 1953.

Some of our association members do have these scales. Some them do not. The association took a neutral position on this mat In fairness to those manufacturers who have not been able to deve these scales, I want to call this situation to your attention.

## REPORT OF THE NATIONAL CONFERENCE COMMITTEE ON RESOLUTIONS, PRESENTED BY MILES A. NELSON, CHAIRMAN

### CONGRATULATIONS TO DR. A. V. ASTIN

Whereas, Dr. A. V. Astin has been appointed Director of the National Bur of Standards by the President of the United States; and

Whereas, the said Dr. Astin favored the 37th National Conference on Weig and Measures with a very interesting and educational talk on the activities the National Bureau of Standards; and

Whereas, Dr. Astin has always demonstrated a keen appreciation of problems facing weights and measures officials and has evidenced a sinc desire to aid weights and measures officials in the development of uniform p cedures and solving tricky problems; Therefore, be it

*Resolved*, That the 37th National Conference on Weights and Measures c gratulate Dr. A. V. Astin on his appointment and extend to him our best wis for a progressive administration.

### APPRECIATION TO DIRECTOR AND STAFF OF THE NATIONAL BUREAU OF STANDAI

Whereas, Dr. A. V. Astin, Director; W. S. Bussey, Chief of the Office of Weig and Measures; and their very able and efficient staff have extended valua assistance and guidance to the 37th Conference, for which the Conference very grateful; Therefore, be it

*Resolved*, That this, the 37th National Conference on Weights and Measu does appreciate such cooperation and assistance from the National Bureau Standards and wishes to make this resolution a part of the records of t Conference.

### APPRECIATION TO COOPERATING OFFICIALS

Whereas, the governing officials of the various States, counties, and mu ipalities, through their manifest interest in weights and measures work, h made it possible for their respective jurisdictions to be represented at this 3 National Conference on Weights and Measures; Therefore, be it

*Resolved*, That this, the 37th National Conference on Weights and Measu does appreciate such cooperation and assistance and wishes to make this reso tion a part of the records of this Conference.

### APPRECIATION TO MANAGEMENT OF HEADQUARTERS HOTEL

Whereas, the management of the Wardman Park Hotel has done everythi within its power to make our Conference a success; Therefore, be it

*Resolved*, That this, the 37th National Conference on Weights and Measu does express its warmest appreciation and thanks to the management of s hotel for their cordial hospitality and cooperation during our meetings; be further

*Resolved*, That the Secretary of this Conference transmit a copy of t resolution to the management of the Wardman Park Hotel.

### APPRECIATION TO THE HON. F. JOSEPH DONOHUE

Whereas, The Honorable F. Joseph Donohue added much to the success and enjoyment of our meeting by delivering a most cordial welcome to the City of Washington; Therefore, be it

*Resolved*, That this, the 37th National Conference on Weights and Measures does hereby acknowledge its appreciation for the courtesies extended by Mr. Donohue.

### APPRECIATION TO THOSE PARTICIPATING IN PROGRAM

Whereas, various committees, speakers, and individuals have given generously of their valuable time and efforts to make the 37th National Conference on Weights and Measures a success; Therefore, be it

*Resolved*, That the 37th National Conference on Weights and Measures does hereby record its grateful appreciation to all who have contributed to the success of the Conference.

### APPRECIATION TO THE PRESS, RADIO, AND THE SCALE JOURNAL

Whereas, the press and radio of the City of Washington have been generous in reporting the activities of our present meeting; and

Whereas, the Scale Journal has likewise been generous in publishing news and advance notices of our present meeting; Therefore, be it

*Resolved*, That this, the 37th National Conference on Weights and Measures, does hereby record its appreciation to the press and radio of the City of Washington and to the Scale Journal.

### ON INVESTIGATION FOR ACCURATE DETERMINATION OF AXLE LOADS ON HIGHWAY VEHICLES

Whereas, weights and measures officials throughout the nation are continually requested to test axle load scales and loadometers and to recommend weighing procedures in order to obtain accurate determinations of axle loads of highway vehicles; and,

Whereas, there is no record of a comprehensive and scientific investigation or having been made into a method for an accurate determination of axle loads of highway vehicles; and

Whereas, the extent and causes of wide variations in results of such tests of axle loads are unknown; Therefore, be it

*Resolved*, That this 37th National Conference on Weights and Measures recommend and request that the National Bureau of Standards, in cooperation with the States, the U. S. Bureau of Public Roads, and the trucking industry, institute an extensive and scientific investigation into the entire field of testing axle loads to devise a method for accurately obtaining a determination of such loads.

(Signed) Miles A. Nelson, *Chairman*,
A. C. Becker,
Walter L. Daniels,
John E. Mahoney,
M. G. Rice,
Louis Snow,
*Committee on Resolutions.*

(The report of the Resolutions Committee was adopted by the Conference.)

## REPORT OF THE NATIONAL CONFERENCE TREASURER, GEORGE F. AUSTIN, JR.

| | | May 1, 1952 |
|---|---|---|
| Balance on hand May 1, 1951 | | $636.47 |
| RECEIPTS: | | |
| May 25—Registration fees—1951 Conference 273 at $5.00 | $1,365.00 | |
| Interest accrued | 14.35 | |
| | | 1,379.35 |
| Total | | 2,015.82 |

DISBURSEMENTS:

May 22–25, 1951—

| | |
|---|---|
| Expenses of 36th National Conference | $946.30 |
| National Bureau of Standards testimonial scroll | 45.00 |
| Rubber stamp (Registration Fee) | 1.44 |
| Two receipt books at $3.30 ea | 6.60 |
| Twelve copies "Parliamentary Law" booklets | 2.45 |
| Total expenses | $1,001 |
| Balance on hand May 1, 1952 | 1,014 |

Respectfully submitted,

(Signed) GEORGE F. AUSTIN, *Treasure*

(The Treasurer's report was adopted by the Conference.)

(Upon motion of L. E. Witt, the Conference voted to authorize the Secret to draw upon the Treasury to pay the customary and usual expenses of Conference.)

## RALPH W. SMITH MADE HONORARY LIFE MEMBER

MR. WITT: Gentlemen, attending with us at this year's Conferenc an outstanding weights and measures personality. He is wearing w inordinate pride the Conference badge of identification. It sho be the other way around. We are signally honored by his prese upon this occasion. He has served the National Bureau of Standa for more than thirty years. He has done much for the National C ference. He has guided us. He has written many practical ha books, which are in fact our official manuals in the conduct of business. I, therefore, move that this gentleman, Ralph W. Smith, accorded the recognition which he has so rightfully earned, and t this 37th National Conference on Weights and Measures bestow u him an honorary life membership; and that the Secretary of Conference be authorized to address a communication to Mr. Sm apprising him of the action of the Conference.

(The motion was adopted unanimously.)

(R. W. Searles, Chaplain, closed the meeting with prayer, and the Thi seventh National Conference on Weights and Measures adjourned at 11 a. m.)

## MEETING OF THE EXECUTIVE COMMITTEE

SECRETARY'S NOTE.—Immediately following adjournment of the Confere a meeting was held of the newly elected Executive Committee of the Confere This meeting was attended by 15 of the 24 members. Dr. A. V. Astin, Preside presided. The following decisions were made with respect to the Thirty-eig National Conference on Weights and Measures:

The Conference will extend over 4 days, with two sessions on the first day, session on the second day, two sessions on the third day, and one session on fourth day.

The dates for the Conference will be May 19, 20, 21, and 22, 1953.

The headquarters for the Conference will be Wardman Park Hotel, Washingt D. C.

The morning session on the second day of the Conference will be held at National Bureau of Standards if suitable arrangements can be made. Ot sessions of the Conference will be held at the headquarters hotel.

The customary informal Conference party will be held on the evening of second day of the Conference.

Some form of special entertainment will be provided for the ladies attend the Conference.

S. Bussey, Conference Secretary, was instructed to arrange the program for Thirty-eighth National Conference.

e Secretary was requested to arrange for an informal open house and tour e National Bureau of Standards laboratories on the afternoon of the second of the Conference.

addition to the above decisions in regard to the Thirty-eighth National erence on Weights and Measures, the Executive Committee recommended the practice of furnishing to the delegates various interesting publicity ses by the National Bureau of Standards be continued and expanded.

e Committee also instructed the Secretary to furnish an appropriate Honor-Life Membership card or certificate to Ralph W. Smith.

## PERSONS ATTENDING THE CONFERENCE

### DELEGATES—STATE, CITY, AND COUNTY OFFICIALS

#### CALIFORNIA

| | |
|---|---|
| e | James E. Brenton, Chief, Bureau of Weights and Measures, Department of Agriculture, Mull Building, Sacramento. |
| nty: | |
| Alameda | William A. Kerlin, Sealer of Weights and Measures, 333 Fifth Street, Oakland 7. |
| Los Angeles | Charles Morris Fuller, Sealer of Weights and Measures, 3200 North Main Street, Los Angeles 31. |
| San Diego | H. J. McDade, County Sealer of Weights and Measures, 1480 "F" Street, San Diego. |

#### CONNECTICUT

| | |
|---|---|
| e | Frank M. Greene, Deputy Commissioner, Food and Drug Commission, State Office Building, Hartford. |
| | Frank J. Delaney, State Inspector of Weights and Measures, State Office Building, Hartford. |
| | Clarence F. Roberts, State Inspector of Weights and Measures, State Office Building, Hartford. |
| : Bridgeport | Louis Snow, Sealer of Weights and Measures, 925 Main Street. |
| nty: | |
| Fairfield | William E. Sheehy, Sealer of Weights and Measures, County Court House, Bridgeport. |
| | Alvin B. Coger, Deputy Sealer of Weights and Measures, Newtown. |
| | Ernest R. Wilson, Deputy Sealer of Weights and Measures, P. O. Box 269, Norwalk. |
| Hartford | Fred E. McKinney, Sealer of Weights and Measures, Hartford County Building, 95 Washington Street, Hartford. |
| | Joseph J. Fanelli, Deputy Sealer of Weights and Measures, Hartford County Building, 95 Washington Street, Hartford. |
| Tolland | William F. Masinda, Sealer of Weights and Measures, West Willington. |
| Windham | John T. Bennett, County Sealer of Weights and Measures, Box 76, Canterbury. |

#### DELAWARE

| | |
|---|---|
| te | Martin L. Kinney, Regulator of Weights and Measures, 600 Delaware Street, New Castle. |

## DISTRICT OF COLUMBIA

Department of Weights, Measures, and Markets, 300 Indiana Avenue, N Washington

| | |
|---|---|
| District | J. Thomas Kennedy, Director.<br>James G. Dance, Deputy Director.<br>John M. Boucher, Supervisor.<br>G. Stuart Reeder, Supervisor.<br>Walter W. Brandt, Inspector and Investig<br>Leo F. Brooks, Inspector and Investigator.<br>William T. Brunson, Inspector and Investig<br>Walter R. Cornelius, Inspector and Inv gator.<br>Leo A. Gnotta, Inspector and Investigator.<br>Fenton C. Harbour, Inspector and Investig<br>William H. Jennings, Inspector and Inv gator.<br>Theodore B. Middleton, Inspector and Inv gator.<br>Ralph A. Montgomery, Inspector and Inv gator.<br>Bernard A. Pettit, Inspector and Investig<br>Francis M. Warner, Inspector and Inv gator.<br>Woodrow W. Wells, Inspector and Investig |

## FLORIDA

| | |
|---|---|
| State | Nalls Berryman, Supervisor, Weights Measures Division, Department of Agricul Nathan Mayo Building, Tallahassee. |
| City: | |
| Jacksonville | Howard E. Crawford, Inspector of Weights Measures, 431 West Eighth Street. |
| Miami | Harvey E. Howard, Supervisor of Weights Measures, Department of Public Welfare. |

## GEORGIA

| | |
|---|---|
| State | John W. D. Harvey, Assistant Chemist, S Oil Laboratory, 524 State Office Build Atlanta. |

## ILLINOIS

| | |
|---|---|
| State | John J. Levitt, Superintendent of Standa 615 Armory Building, Springfield.<br>William R. Otto, State Inspector of Wei and Measures, 505 South Clinton Str Bloomington. |
| City: Chicago | Irvine M. Levy, Sealer of Weights and M ures, Room 608 City Hall.<br>Frank J. Fitzgerald, Chief Deputy Inspecto Weights and Measures, Room 608 City Ha |

## INDIANA

| | |
|---|---|
| State | Rollin E. Meek, Director, Division of Wei and Measures, Board of Health, 1330 W Michigan Street, Indianapolis. |
| City: | |
| Fort Wayne | James A. Hilgemann, Deputy State Inspecto Weights and Measures, 301 South Clin Street. |
| Gary | Cleo C. Morgan, City Sealer of Weights Measures, City Hall, Room 204. |
| Terre Haute | John T. Harper, Inspector of Weights and M ures, 205 City Building. |
| County: | |
| Grant | Reuben C. Parks, Inspector of Weights Measures, Court House, Marion. |
| Vigo | William H. Roberts, Inspector of Weights Measures, Room 5, Court House, Terre Ha |

IOWA

te---------- JAMES W. REESE, Supervisor, Division of Weights and Measures, Department of Agriculture, Des Moines.

KANSAS

te---------- J. FRED TRUE, State Sealer, Weights and Measures Division, Board of Agriculture, 915 Harrison Street, Topeka.
LEW GALLOWAY, Chairman, Weights and Measures Committee, Board of Agriculture, 915 Harrison Street, Topeka.

KENTUCKY

te---------- BEN S. ADAMS, Commissioner of Agriculture, Frankfort.
GEORGE L. JOHNSON, Director, Division of Weights and Measures, Department of Agriculture, New State Capitol, Frankfort.

y: Louisville---------- WILLIAM H. ISING, JR., Superintendent, Division of Weights and Measures, Department of Public Safety, Room 3, City Hall.

LOUISIANA

ate---------- ALOIS J. MAYER, Director, Division of Weights and Measures, Department of Agriculture and Immigration, P. O. Box 951, Baton Rouge 1.

MAINE

ate---------- JAMES A. BOYLE, Deputy State Sealer, Bureau of Weights and Measures, Department of Agriculture, State House, Augusta.

ty: Portland---------- CHARLES JAMES WILLS, Sealer of Weights and Measures, 389 Congress Street.

MARYLAND

ate---------- JOHN E. MAHONEY, Superintendent of Weights and Measures, State Department of Markets, Board of Agriculture, University of Maryland, College Park.
DR. PAUL E. NYSTROM, State Department of Markets, University of Maryland, College Park.

ty: Baltimore---------- GEORGE H. LEITHAUSER, Senior Assistant Superintendent of Weights and Measures, 1106 Municipal Building.
MORRIS BRATMAN, Inspector of Weights and Measures, 1106 Municipal Building.
EDWIN EDWARD JAFFA, Inspector of Weights and Measures, 1106 Municipal Building.

unty:
Baltimore---------- FRANK J. VITTEK, Chief Inspector of Weights and Measures, Offutt Building, Towson 4.
GEORGE A. KLEIN, Assistant Inspector of Weights and Measures, Offutt Building, Towson 4.

Montgomery---------- A. MORTON THOMAS, Director, Department of Inspection and Licenses, Court House, Rockville.
WILFORD ELLIS DAYHOFF, Inspector of Weights and Measures, County Court House, Rockville.

MASSACHUSETTS

ate---------- JOHN P. MCBRIDE, Director of Standards and Necessaries of Life, 194 State House, Boston.

| | |
|---|---|
| City: | |
| Cambridge | JOSEPH M. O'NEIL, Sealer of Weights and Me ures, Municipal Building. |
| Fall River | JAMES A. BENSON, Sealer of Weights and Me ures, City Hall Annex. |
| Malden | JOHN J. KELLEY, City Sealer of Weights a Measures. |
| Medford | WILLIAM S. VINCE, Deputy Sealer of Weights a Measures, City Hall. |
| West Springfield | CARL A. JACOBSON, Sealer, Department of Weig and Measures. |
| County: Arlington | JAMES J. DOLAN, Sealer, Weights and Measu Department, Arlington Town Hall, Arlingt |

MICHIGAN

| | |
|---|---|
| State | MILES A. NELSON, Chief, Bureau of Market and Enforcement, Department of Agricultu 725 State Office Building, Lansing 13. |
| City: | |
| Dearborn | MARTIN C. GRIFFITH, Councilman, City Coun |
| | MITCHELL O. NICKON, City Sealer of Weights a Measures, 4731 Korte Street. |
| | CHARLES H. WALLER, Inspector, Department Licenses, Weights, and Measures, Police a Courts Building. |
| Detroit | GEORGE F. AUSTIN, JR., Deputy Sealer of Weigl and Measures, 740 Elmwood Avenue. |
| | WILLIAM B. HEASLIP, Supervising Inspector, I reau of Markets, Weights, and Measures, 7 Elmwood Avenue. |
| Highland Park | JAMES F. BAKER, City Sealer of Weights a Measures, 25 Gerald Street. |
| Lansing | WALTER M. SAXTON, City Sealer and Mark master, 333 North Cedar. |
| Pontiac | WALTER A. BAERWOLF, Sealer of Weights a Measures, 8 North Perry Street. |

MINNESOTA

| | |
|---|---|
| State | ERLING HANSEN, Supervisor, Department Weights and Measures, Railroad and Wa house Commission, Corn Exchange Buildi Minneapolis 15. |
| | DAVID LUNDEEN, State Weighmaster, Track a Hopper Scale Department, 320 Flour Exchan Building, Minneapolis 15. |
| | CHRISTIAN CHRISTENSEN, Inspector, Weights a Measures Department, 216 Corn Exchan Building, Minneapolis 15. |
| | MELVIN C. ILSTRUP, State Inspector of Weigh and Measures, 2124 Riverside Aven Minneapolis. |
| City: Minneapolis | EDWARD J. EGAN, Alderman-Chairman Weigh and Measures, Court House. |
| | RUSSELL S. ACKERMAN, Superintendent, Depa ment of Licenses, Weights, and Measur Room 3, City Hall. |

MISSOURI

| | |
|---|---|
| City: University City | D. J. ALMON, General Inspector, City Hall. |

NEVADA

| | |
|---|---|
| State | A. J. RAFAEL, Resident Inspector, Departme of Weights and Measures, Public Servi Division, University of Nevada, P. O. B 747, Las Vegas. |

te—— C. A. Lyon, Director of Markets and Standards, Department of Agriculture, Concord.
Alfred H. Dittrich, Chief Inspector, Bureau of Weights and Measures, Department of Agriculture, Concord.
Maurice W. Mullen, Inspector of Weights and Measures, Department of Agriculture, Concord.

NEW JERSEY

te—— Joseph G. Rogers, State Superintendent, Division of Weights and Measures, 187 West Hanover Street, Trenton 7.
Archie T. Smith, Assistant State Superintendent, Division of Weights and Measures, 187 West Hanover Street, Trenton 7.
Samuel H. Christie, Jr., Senior Inspector, Division of Weights and Measures, 187 West Hanover Street, Trenton 7.

y:
Camden—— Alfred DiPiero, Superintendent of Weights and Measures, City Hall.
Clifton—— Felix J. Sandri, Superintendent of Weights and Measures, City Hall.
Englewood—— Leonard DeRienzo, Superintendent of Weights and Measures, City Hall.
Hoboken—— Charles P. Romano, Superintendent of Weights and Measures, City Hall.
Jersey City—— John S. Burke, Municipal Superintendent of Weights and Measures, City Hall.
Passaic—— Paul DeVries, Superintendent of Weights and Measures, P. O. Box 663, Municipal Building.
Joseph Shaw, Assistant Superintendent of Weights and Measures, Municipal Building.
Paterson—— Joseph P. Leonard, Superintendent of Weights and Measures, 115 Van Houten Street.
William J. Kehoe, Assistant Superintendent of Weights and Measures, 115 Van Houten Street.
Union City—— Alfred O. Oslund, Superintendent, Department of Weights and Measures, 3715 Palisade Avenue.

nty:
Bergen—— Michael J. Santimauro, Superintendent of Weights and Measures, 66 Zabriskie Street, Hackensack.
Ernest E. Dawson, Assistant Superintendent of Weights and Measures, 66 Zabriskie Street, Hackensack.
Camden—— Albert C. Becker, County Superintendent of Weights and Measures, City Hall, Camden.
Cumberland—— Alfred Lirio, Superintendent of Weights and Measures, Court House, Bridgeton.
Winfield K. Thompson, Assistant Superintendent of Weights and Measures, Court House, Bridgeton.
Mercer—— Ralph M. Bodenweiser, Superintendent of Weights and Measures, Court House, Trenton.
Middlesex—— Charles F. Sullivan, Superintendent of Weights and Measures, Room 208 Sheriff's Office Building, New Brunswick.
Monmouth—— Glenn L. Berry, County Superintendent of Weights and Measures, 706 Eighth Avenue, Asbury Park.
Morris—— Del G. Nelson, Superintendent of Weights and Measures, Court House, Morristown.

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| County—Continued | |
| Passaic | WILLIAM MILLER, Superintendent of Weig and Measures, Administration Building, Pa son. |
| Union | JAMES M. DIETZ, Superintendent of Weights Measures, Court House, Elizabeth 4. |
| | **NEW YORK** |
| State | DR. ERWIN V. MOORE, Assistant Commissio Department of Agriculture and Mark State Office Building, Albany. |
| | CLEMENT A. BAKER, Director, Bureau of Weig and Measures, Department of Agriculture a Markets, State Office Building, Albany. |
| | JOHN J. LEONARD, Supervising Inspector, N York State Bureau of Weights and Measu 24 Griswold Avenue, Troy. |
| | MATTHEW G. RICE, Inspector, Bureau of Weig and Measures, Department of Agriculture a Markets, 8 Marlette Place, White Plains. |
| City: | |
| Binghamton | HARRY A. LASON, Sealer of Weights and Me ures, 60 Robinson Street. |
| Buffalo | LOUIS J. SCHUSTER, City Sealer of Weights a Measures, Room 5, City Hall. |
| Jamestown | CARL A. LARSON, City Sealer of Weights a Measures, 1 Fenton Place. |
| Lackawanna | JOHN J. SERES, City Sealer of Weights a Measures, 4 Rosary Avenue. |
| Rochester | ANTHONY C. SAMENFINK, City Sealer of Weig and Measures, Department of Commer Rochester Food Terminal. |
| County: | |
| Erie | O. F. GAYLORD, County Sealer of Weights a Measures, County Hall, Buffalo. |
| Monroe | EARL D. HUBBLE, Sealer of Weights and Me ures, Room B, 1400 South Avenue, Rochest |
| Nassau | ROBERT WILLIAMS, Sealer of Weights and Me ures, Old County Court House Annex, Mineo |
| | WILLIAM KIRK, JR., Assistant Sealer of Weig and Measures, Old County Court House nex, Mineola. |
| Niagara | HENRY C. HULSHOFF, Sealer of Weights a Measures, 17 High Street, Lockport. |
| | **NORTH CAROLINA** |
| State | C. D. BAUCOM, Superintendent, Weights a Measures Division, Department of Agricultu 415 Agriculture Building, Raleigh. |
| | JOHN I. MOORE, Supervisor, Weights and Me ures Division, Department of Agricultu 318 Morrison Avenue, Raleigh. |
| | **NORTH DAKOTA** |
| State | J. C. GOLL, Chief Inspector, Weights and Me ures Department, Public Service Commissi Bismarck. |
| | **OHIO** |
| State | V. D. CAMPBELL, Deputy State Sealer, Divisi of Foods and Dairies, Department of Agric ture, 710 State Office Building, Columbus 15. |
| City: | |
| Akron | ROBERT K. SLOUGH, City Sealer, Division Weights and Measures, 102 Municipal Buildi |
| Cincinnati | WM. E. G. RHEIN, Superintendent, Division Markets, Weights and Measures, Departme of Safety, 2nd Floor, Market House. |

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|---|---|
| Lorain | Gabor Toth, City Sealer of Weights and Measures, 3019 Caroline Avenue. |
| nty: Medina | Robert W. Searles, Deputy Sealer of Weights and Measures, Court House, Medina. |

**PENNSYLVANIA**

| | |
|---|---|
| e | Joseph F. Blickley, Director, Bureau of Standard Weights and Measures, Department of Internal Affairs, Capitol Building, Harrisburg.<br>Spencer H. Seighman, Assistant Director, Bureau of Standard Weights and Measures, Department of Internal Affairs, Capitol Building, Harrisburg. |
| : Erie | Paul F. Watson, City Inspector of Weights and Measures, City Hall. |
| nty: Erie | Robert W. Daggett, County Inspector of Weights and Measures, North Girard. |

**RHODE ISLAND**

| | |
|---|---|
| e | Edward R. Fisher, State Sealer of Weights and Measures, Department of Labor, State House, Providence.<br>James F. Corrigan, Deputy State Sealer of Weights and Measures, Department of Labor, Providence. |
| : | |
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S. ARBUCKLE, Dairy Department, University of Maryland, College Park, Md.
ARLES BAUER, 328 West Ridge Road, Gary, Indiana.
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COL. ALEX PISCIOTTA, 3348 Gunston Road, Alexandria, Va.
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